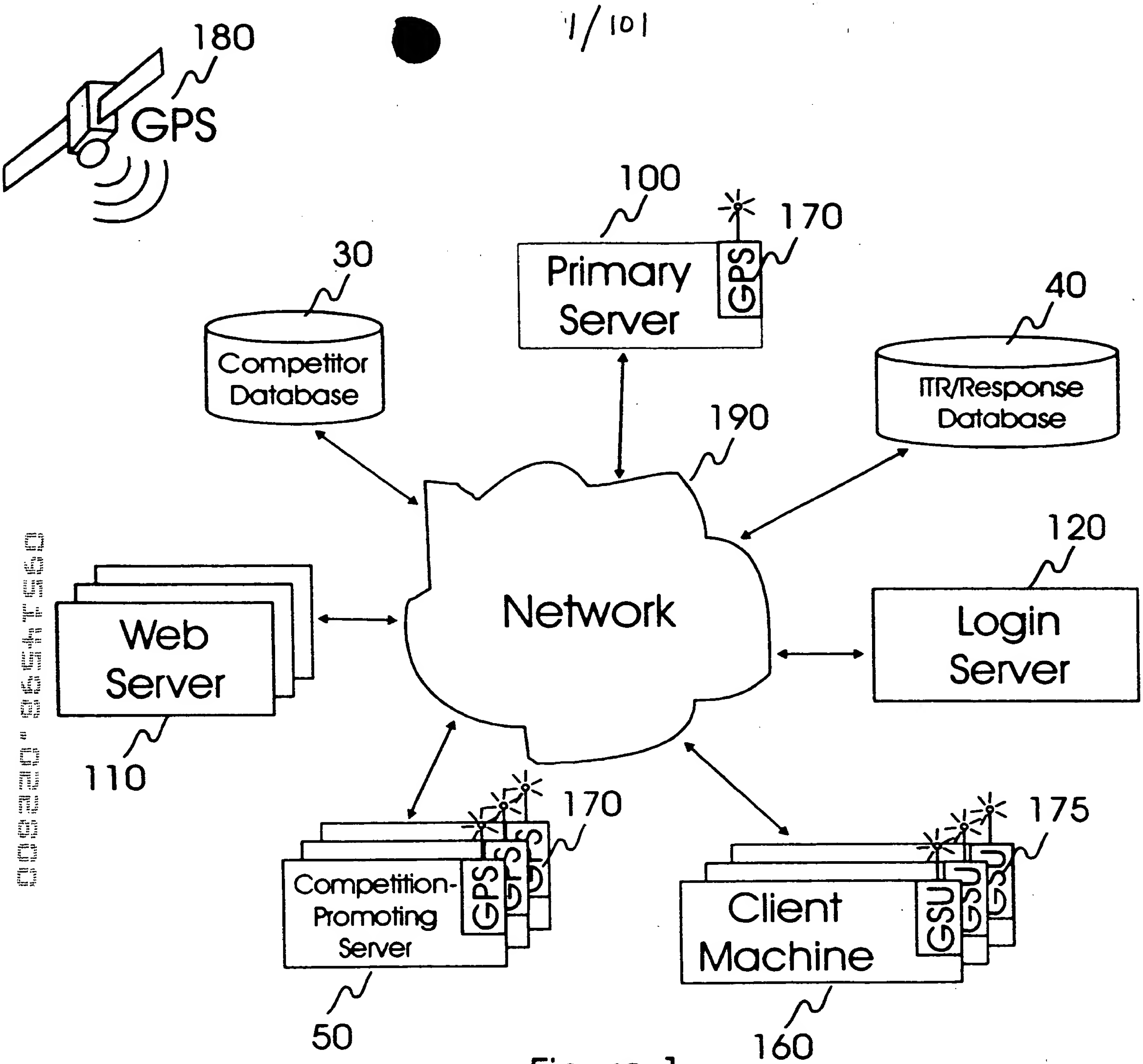

180
GPS
100
Primary Server
GPS
170
30
Competitor Database
40
ITR/Response Database
190
Network
120
Login Server
Web Server
110
170
GPS
Competition-Promoting Server
50
175
GSU
Client Machine
160

Figure 1

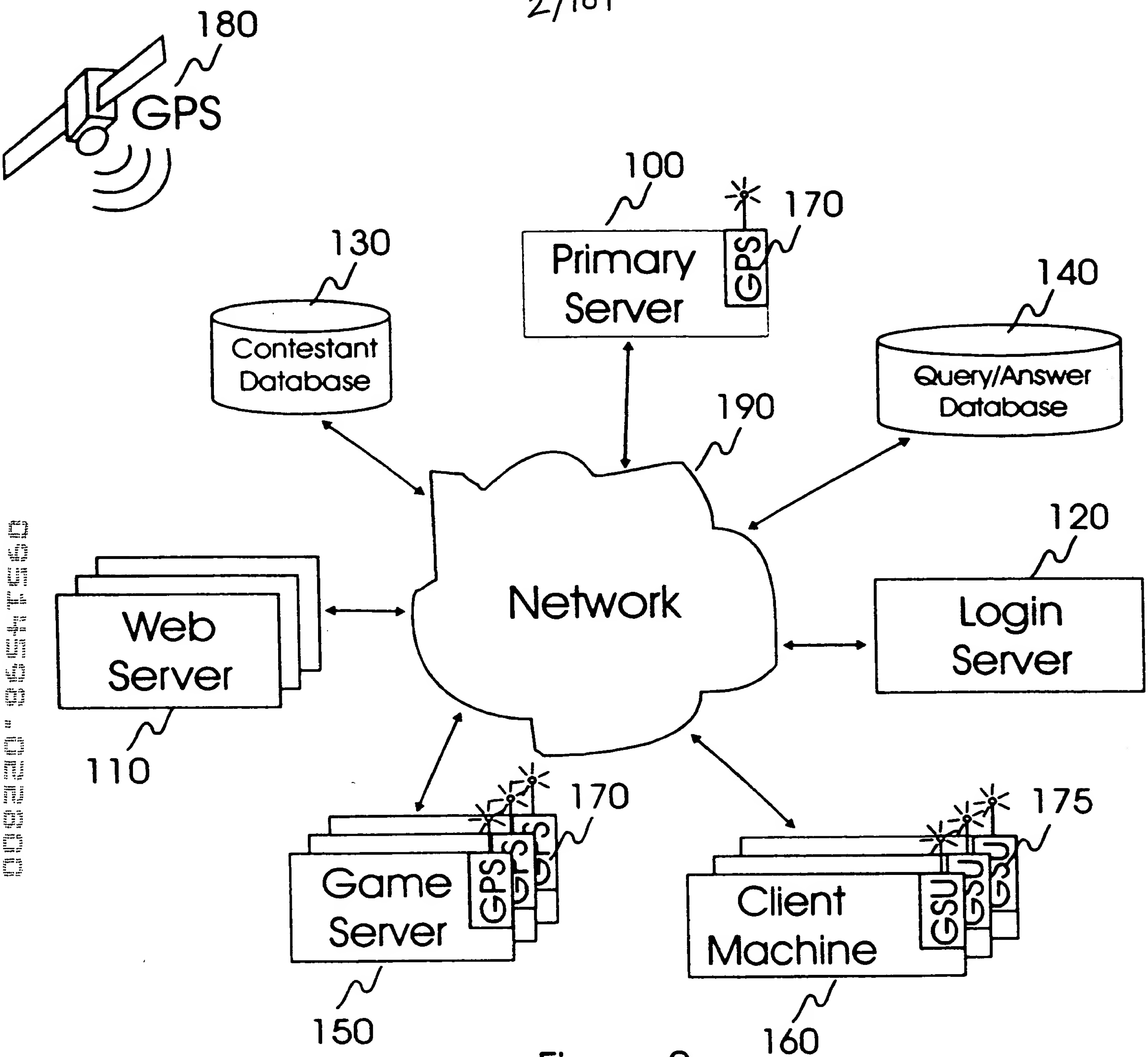

180
GPS
100
170
Primary Server
GPS
130
Contestant Database
140
Query/Answer Database
190
Network
Web Server
110
120
Login Server
170
GPS
Game Server
150
175
GSU
Client Machine
160

Figure 2

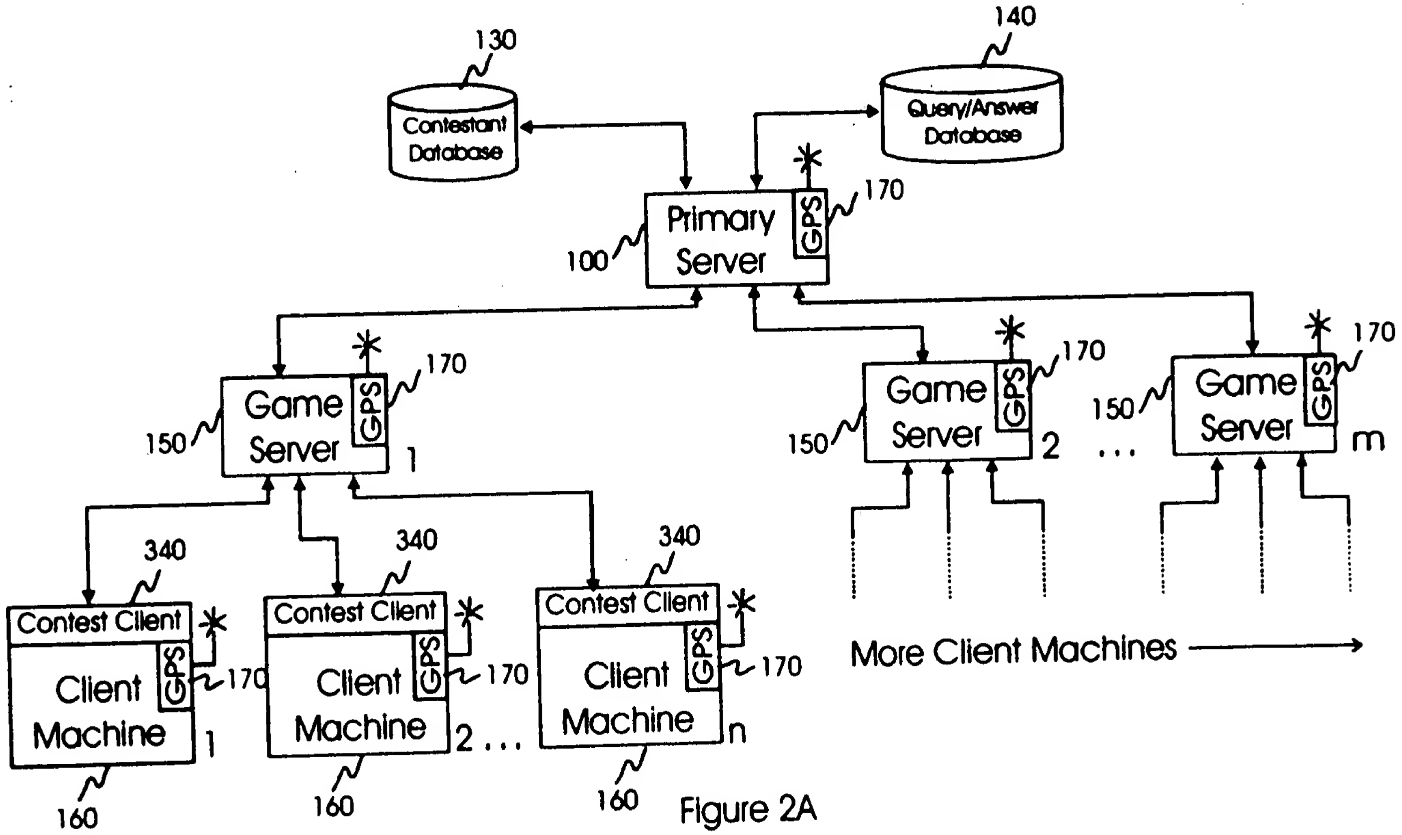

130
Contestant Database
140
Query/Answer Database
Primary Server
GPS
100
170
Game Server
GPS
150
170
1
Game Server
GPS
150
170
2
. . .
Game Server
GPS
150
170
m
340
Contest Client
Client Machine
GPS
170
160
1
340
Contest Client
Client Machine
GPS
170
160
2 . . .
340
Contest Client
Client Machine
GPS
170
160
n
More Client Machines

Figure 2A

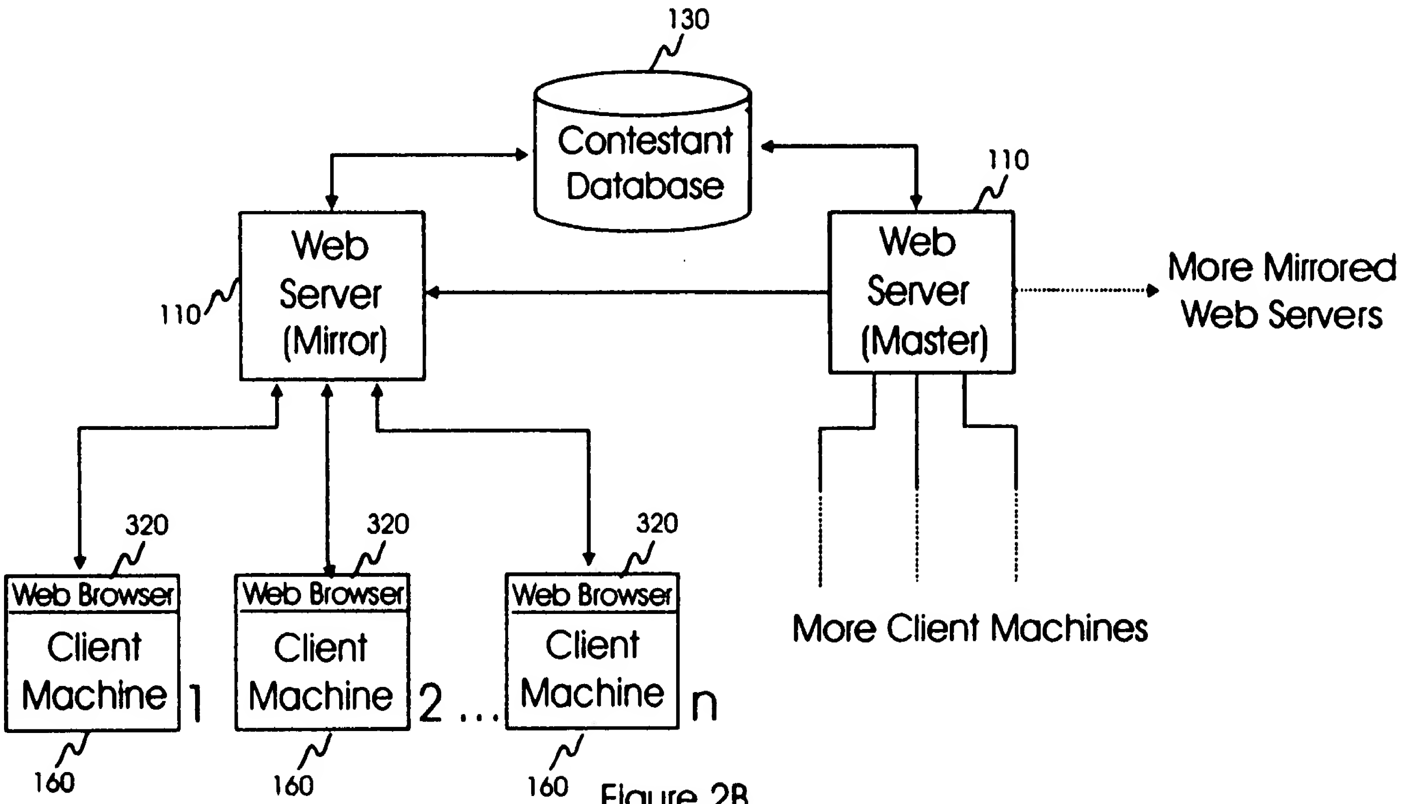

130
Contestant Database
110
Web Server (Mirror)
110
Web Server (Master)
More Mirrored Web Servers
320
Web Browser
Client Machine
1
320
Web Browser
Client Machine
2 …
320
Web Browser
Client Machine
n
160
160
160
More Client Machines

Figure 2B

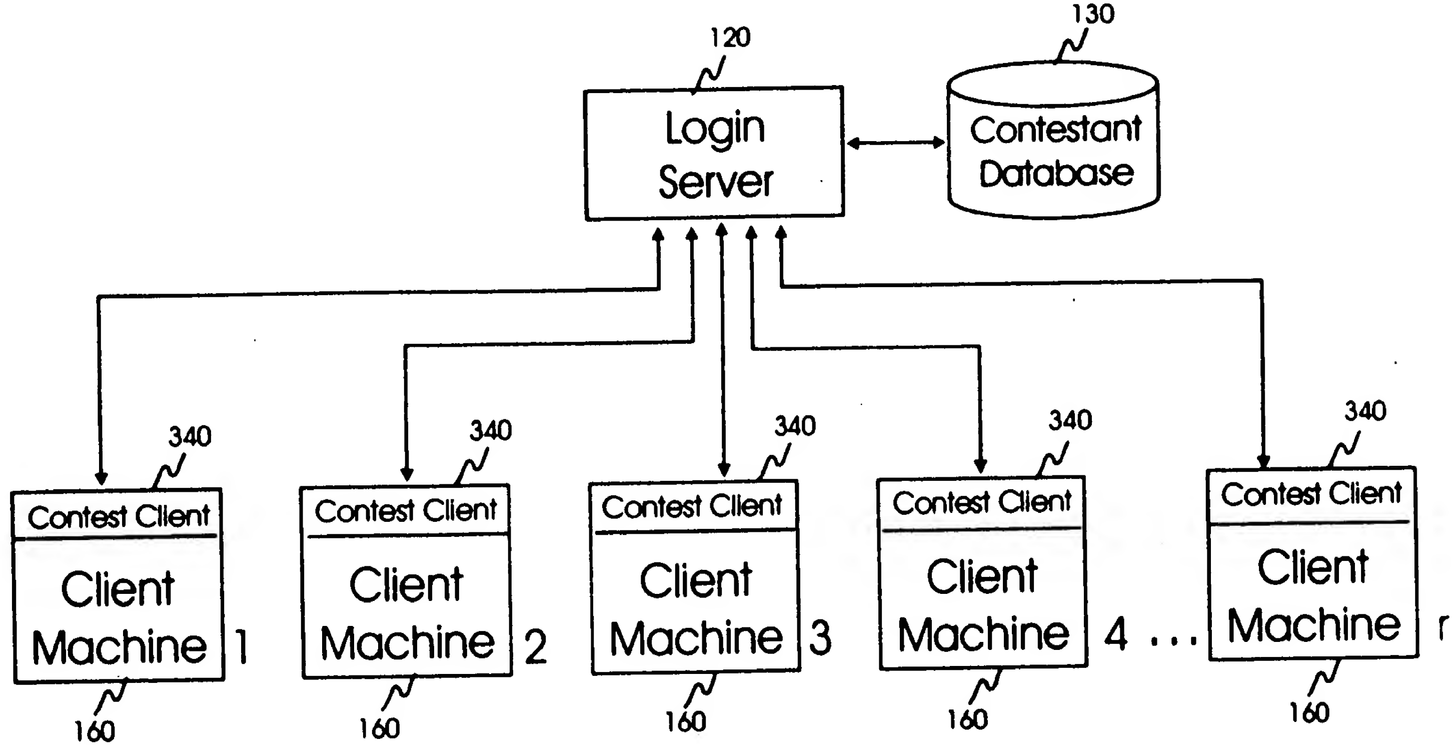

120
Login Server
130
Contestant Database
340
Contest Client
Client Machine
1
340
Contest Client
Client Machine
2
340
Contest Client
Client Machine
3
340
Contest Client
Client Machine
4 . . .
340
Contest Client
Client Machine
r
160
160
160
160
160

Figure 2C

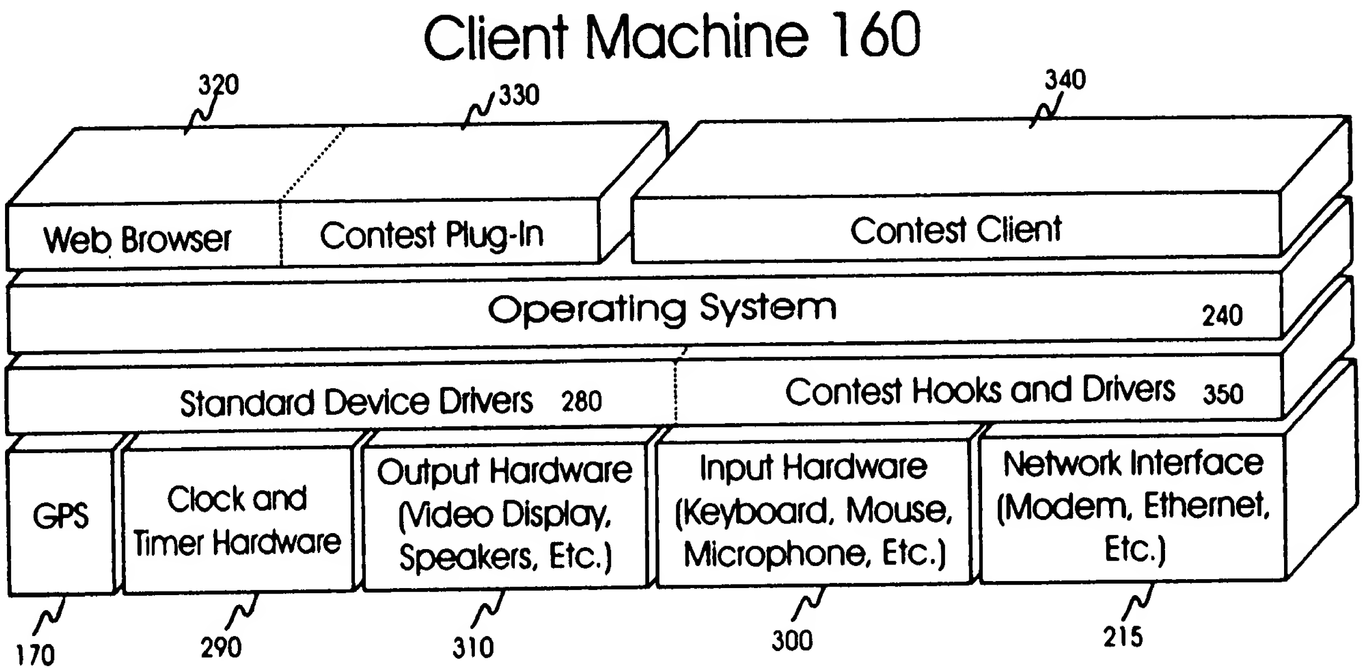

Client Machine 160
320
330
340
Web Browser
Contest Plug-In
Contest Client
Operating System
240
Standard Device Drivers 280
Contest Hooks and Drivers 350
GPS
Clock and Timer Hardware
Output Hardware (Video Display, Speakers, Etc.)
Input Hardware (Keyboard, Mouse, Microphone, Etc.)
Network Interface (Modem, Ethernet, Etc.)
170
290
310
300
215

Figure 2D

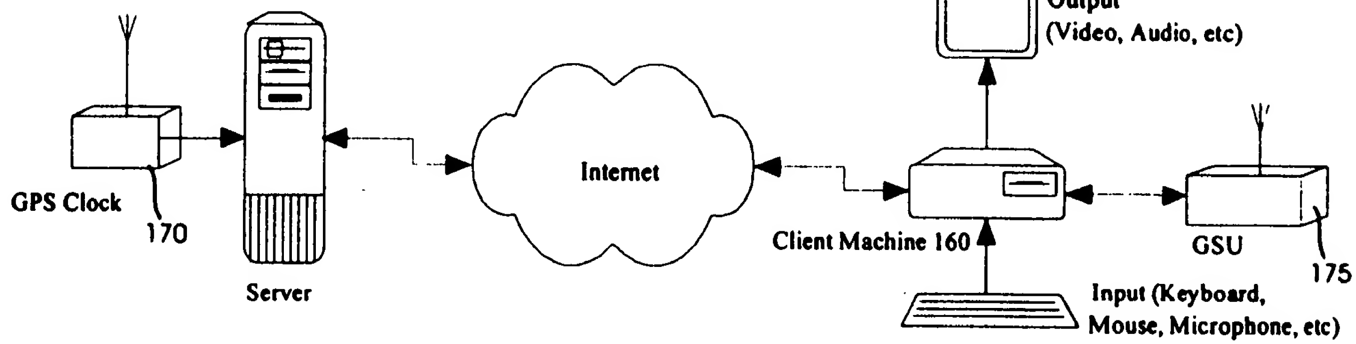

GPS Clock
170
Server
Internet
Output
(Video, Audio, etc)
Client Machine 160
GSU
175
Input (Keyboard,
Mouse, Microphone, etc)

Figure 2D1

Global Synchronization Unit 175

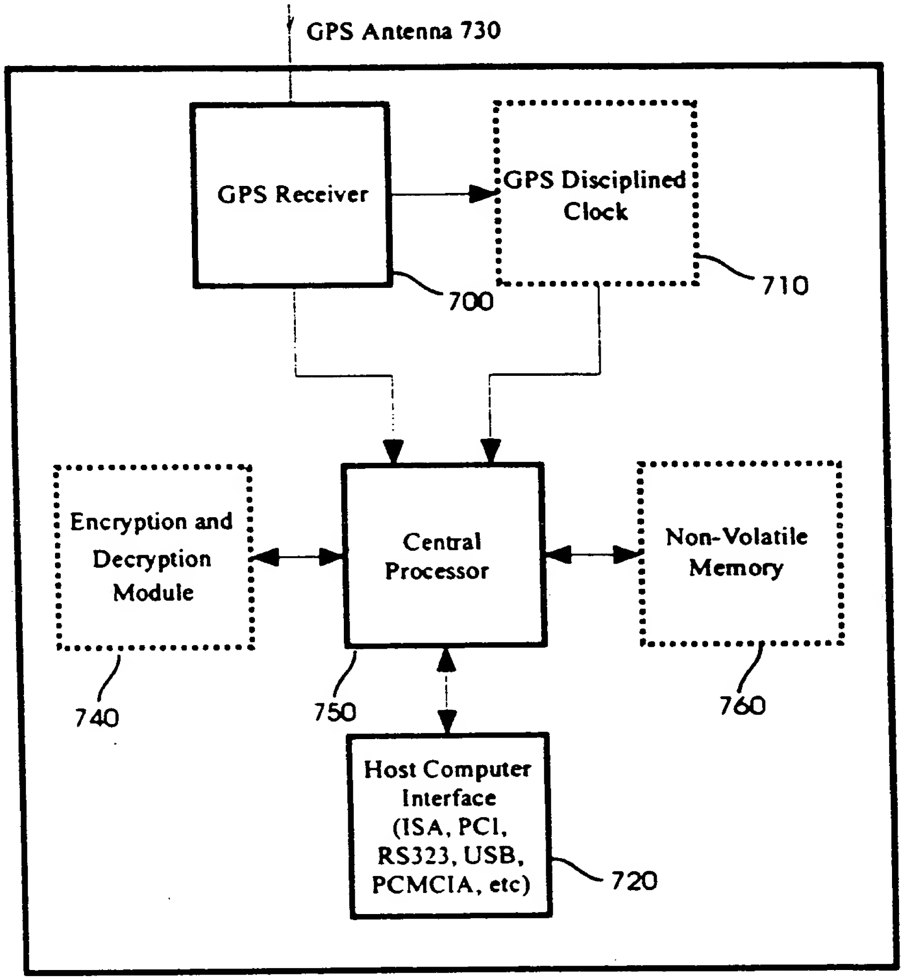


Figure 2D2

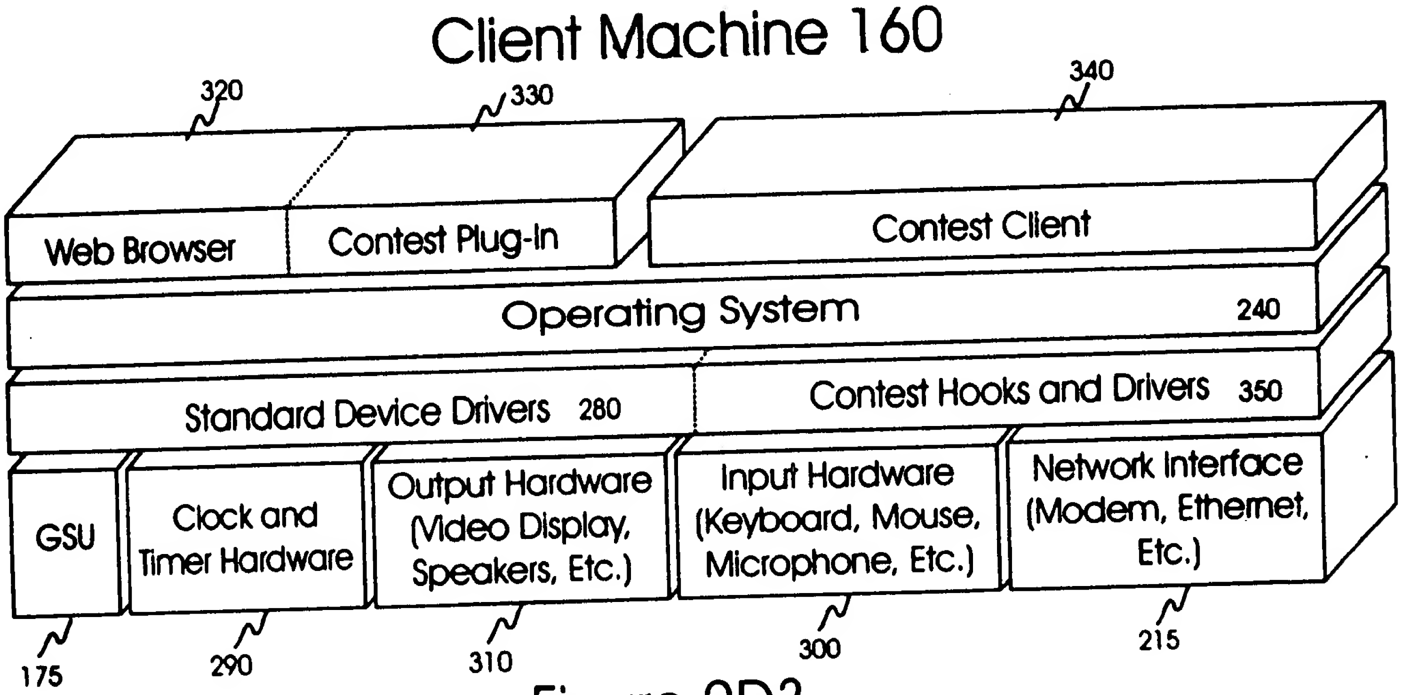

Client Machine 160
320
330
340
Web Browser
Contest Plug-In
Contest Client
Operating System
240
Standard Device Drivers
280
Contest Hooks and Drivers
350
GSU
Clock and Timer Hardware
Output Hardware (Video Display, Speakers, Etc.)
Input Hardware (Keyboard, Mouse, Microphone, Etc.)
Network Interface (Modem, Ethernet, Etc.)
175
290
310
300
215

Figure 2D3

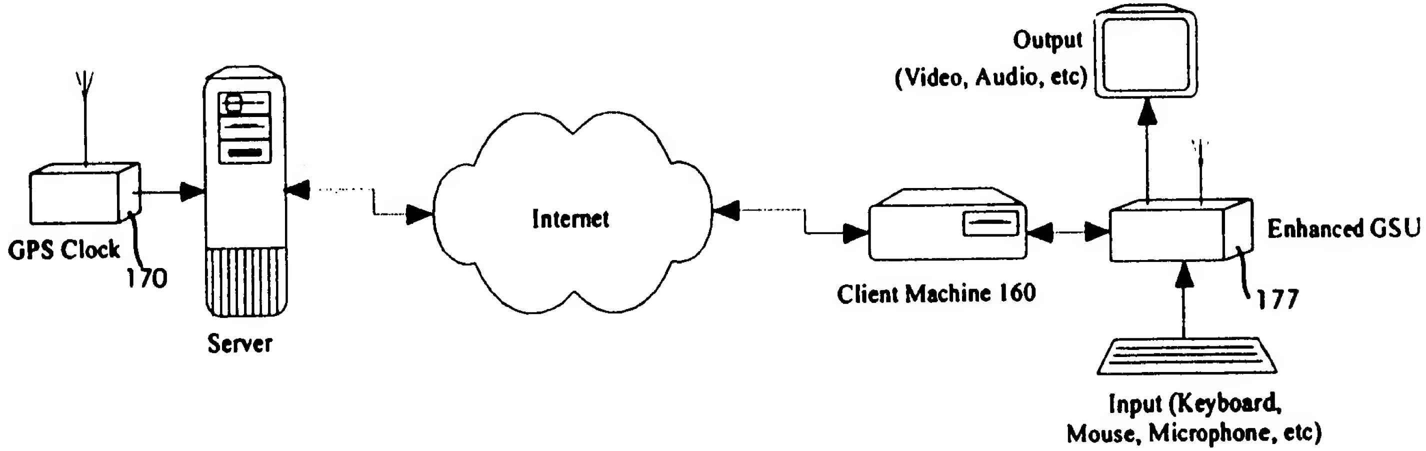

GPS Clock
170
Server
Internet
Client Machine 160
Output
(Video, Audio, etc)
Enhanced GSU
177
Input (Keyboard,
Mouse, Microphone, etc)

Figure 2D4

Enhanced Global Synchronization Unit 177

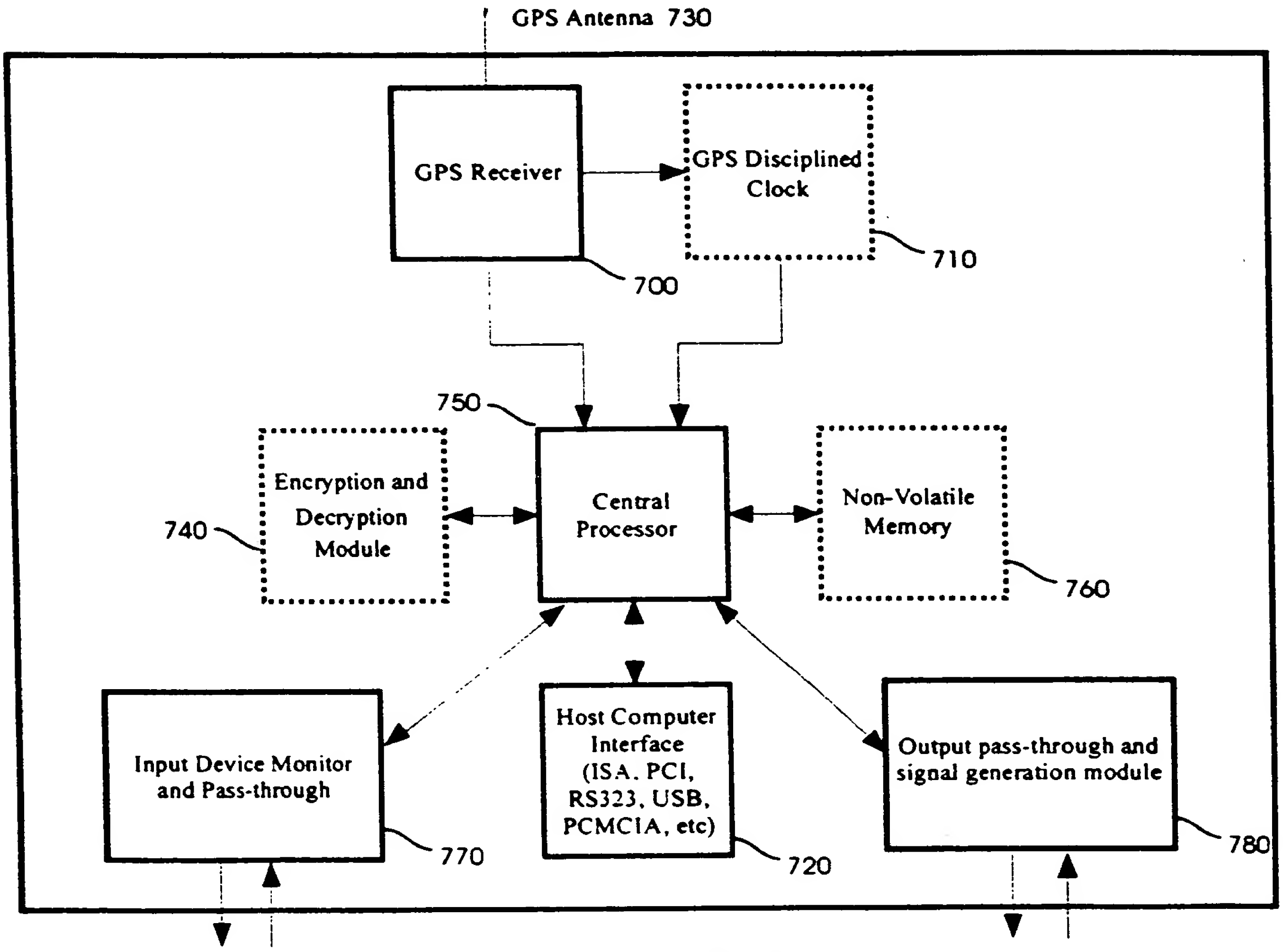


Figure 2D5

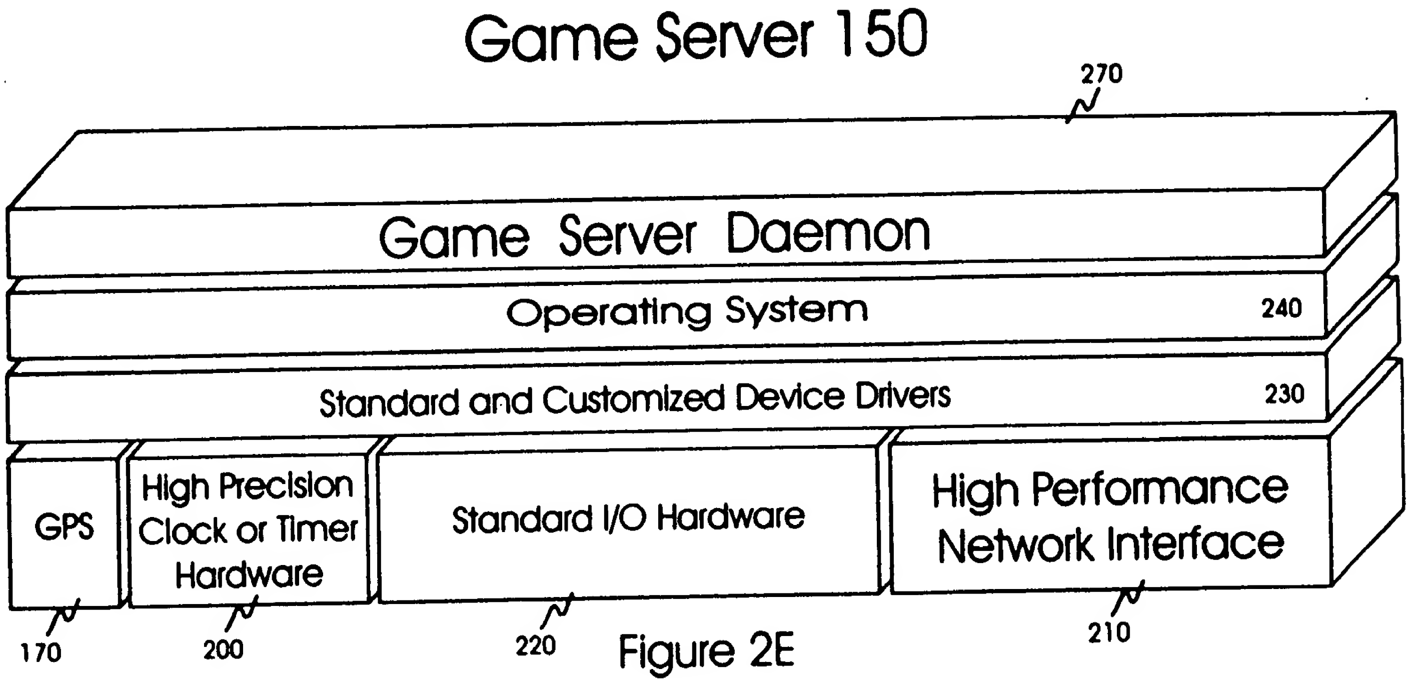

Game Server 150
270
Game Server Daemon
Operating System
240
Standard and Customized Device Drivers
230
GPS
170
High Precision Clock or Timer Hardware
200
Standard I/O Hardware
220
High Performance Network Interface
210

Figure 2E

Web Server 110

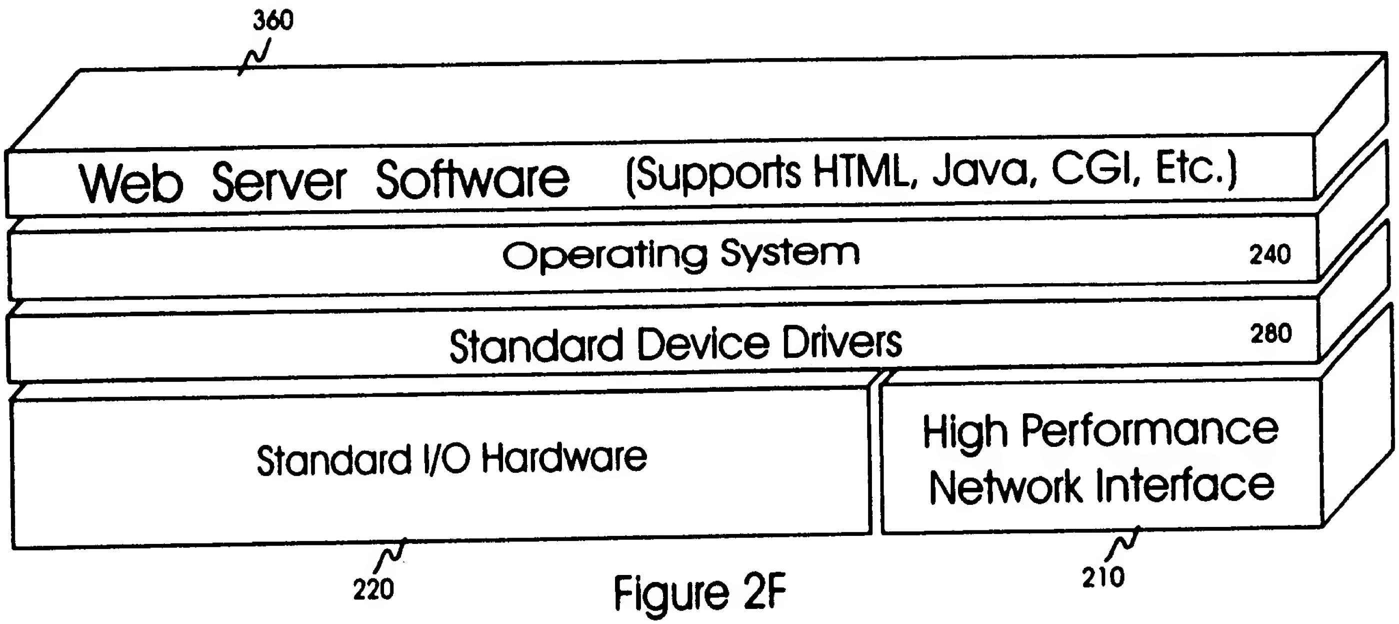


Figure 2F

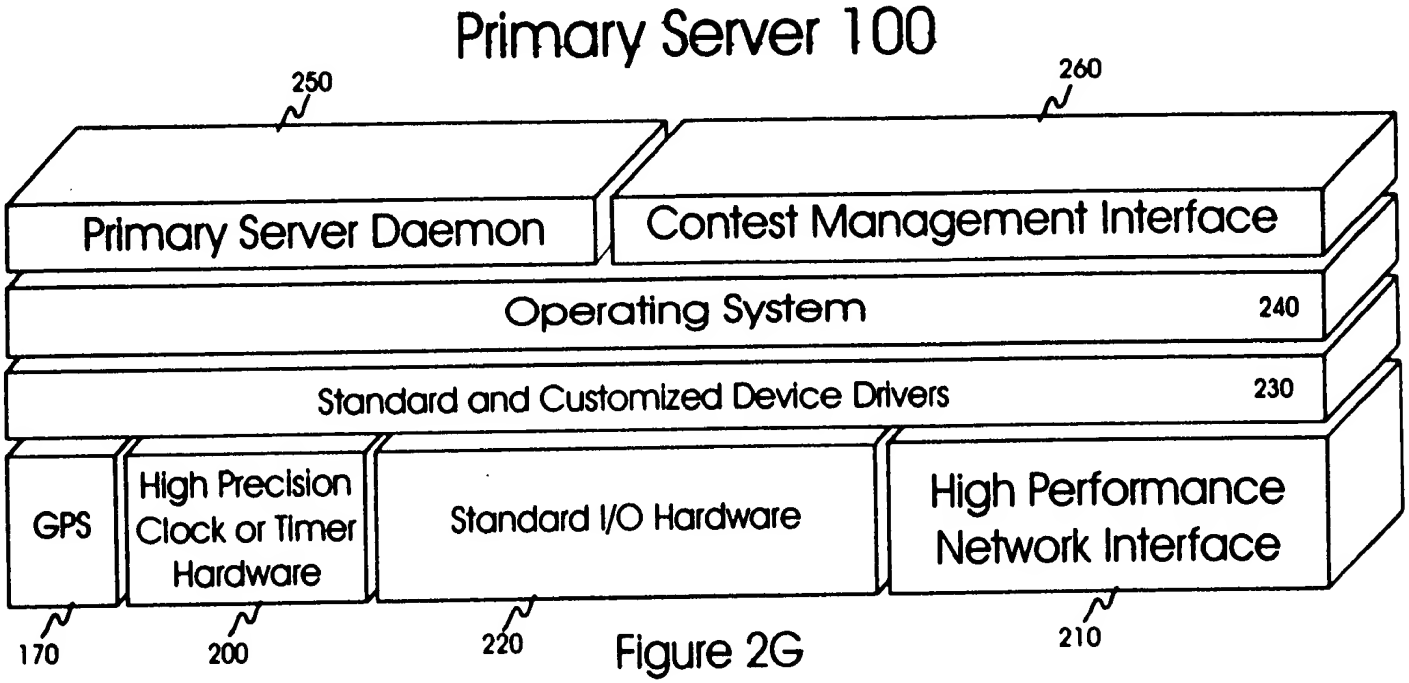

Primary Server 100
250
260
Primary Server Daemon
Contest Management Interface
Operating System
240
Standard and Customized Device Drivers
230
GPS
High Precision Clock or Timer Hardware
Standard I/O Hardware
High Performance Network Interface
170
200
220
210

Figure 2G

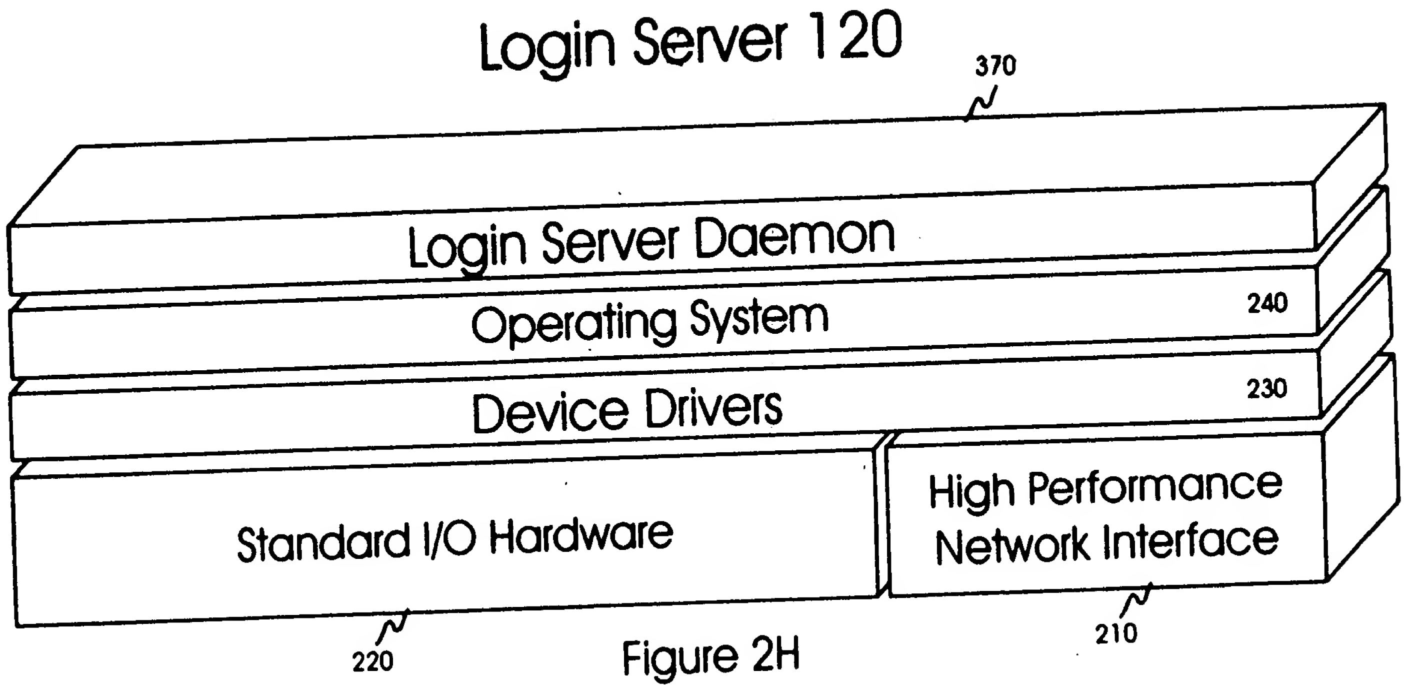
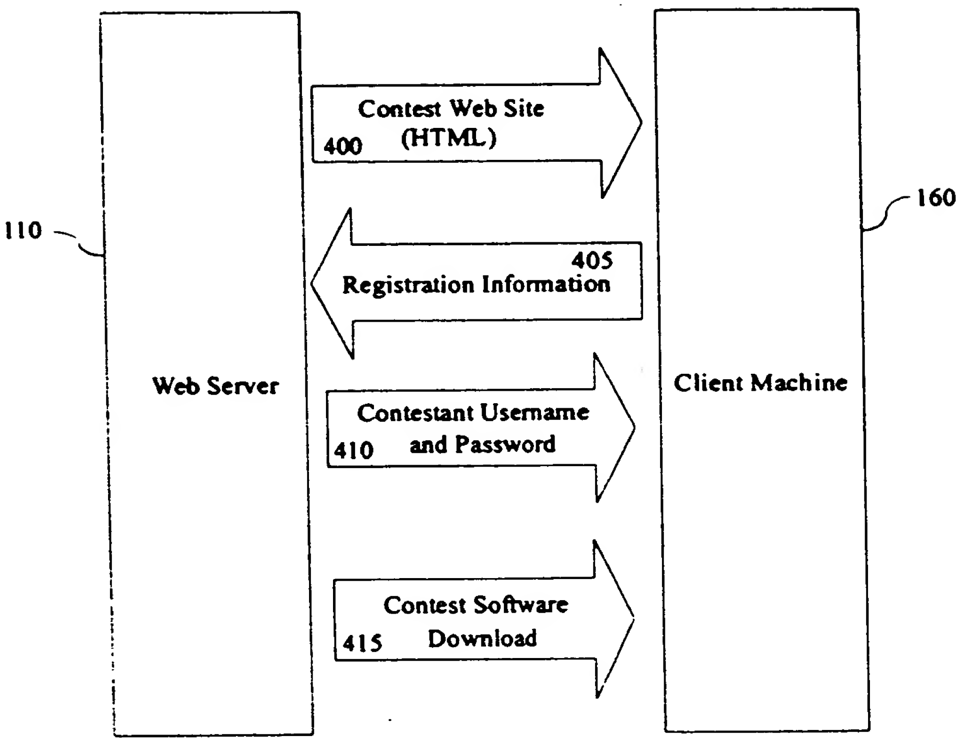

Login Server 120
370
Login Server Daemon
Operating System
240
Device Drivers
230
Standard I/O Hardware
220
High Performance
Network Interface
210

Figure 2H



Web Server
110
Contest Web Site (HTML)
400
405
Registration Information
Contestant Username and Password
410
Contest Software Download
415
Client Machine
160

Figure 3A

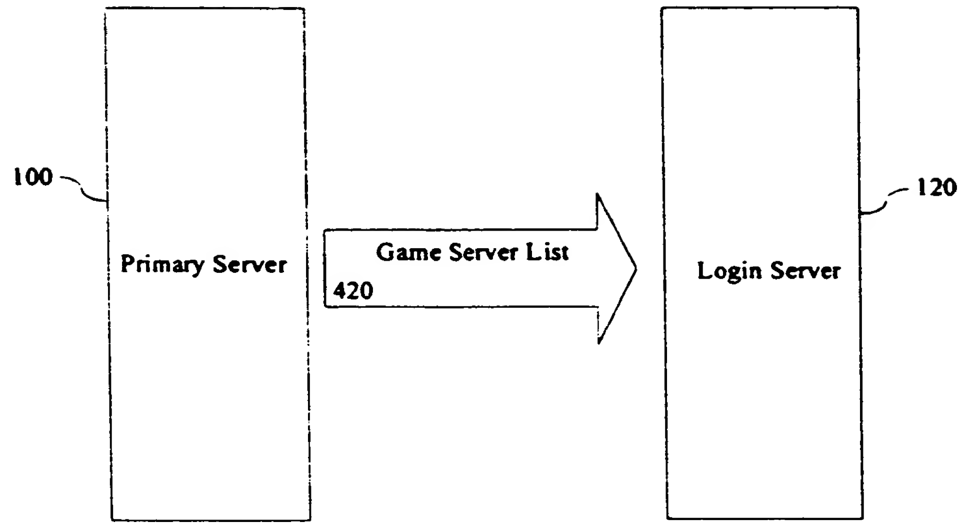


Figure 3B

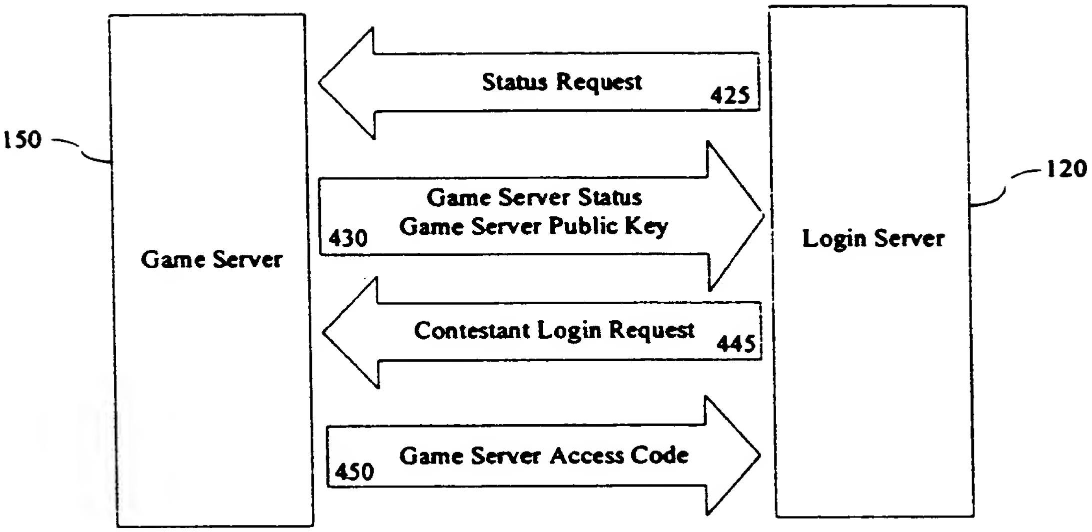

150
Game Server
Status Request
425
Game Server Status
Game Server Public Key
430
Contestant Login Request
445
Game Server Access Code
450
Login Server
120

Figure 3C

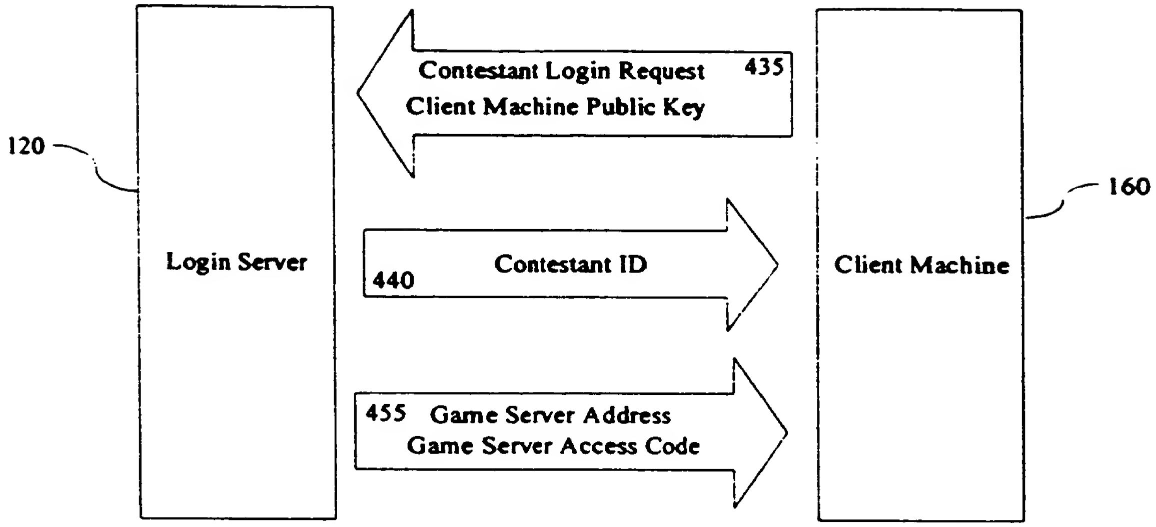

120
Login Server
Contestant Login Request
Client Machine Public Key
435
440
Contestant ID
455
Game Server Address
Game Server Access Code
Client Machine
160

Figure 3D

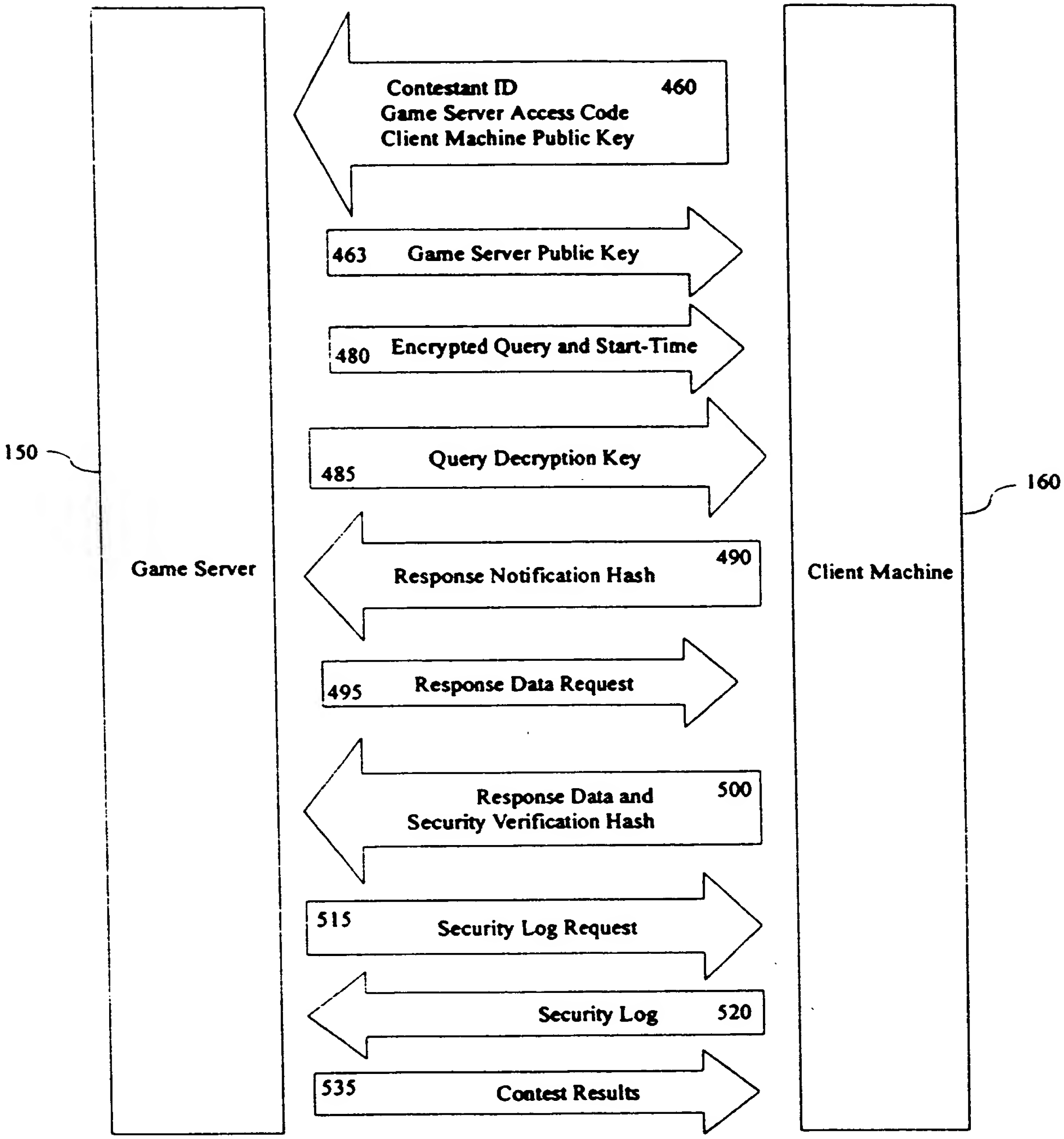

Contestant ID
Game Server Access Code
Client Machine Public Key
460
463
Game Server Public Key
480
Encrypted Query and Start-Time
485
Query Decryption Key
150
160
Game Server
Client Machine
490
Response Notification Hash
495
Response Data Request
500
Response Data and
Security Verification Hash
515
Security Log Request
Security Log
520
535
Contest Results

Figure 3E

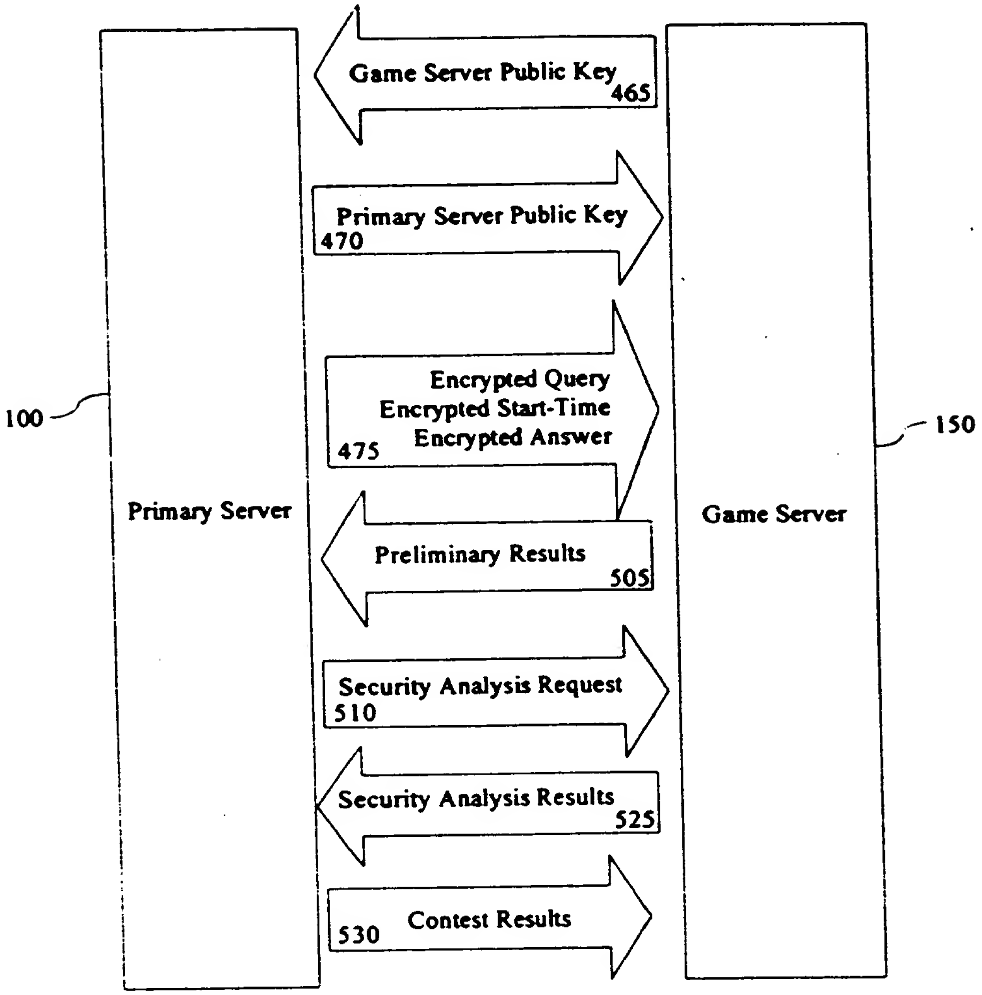

100
Primary Server
Game Server Public Key
465
Primary Server Public Key
470
Encrypted Query
Encrypted Start-Time
Encrypted Answer
475
Preliminary Results
505
Security Analysis Request
510
Security Analysis Results
525
Contest Results
530
150
Game Server

Figure 3F

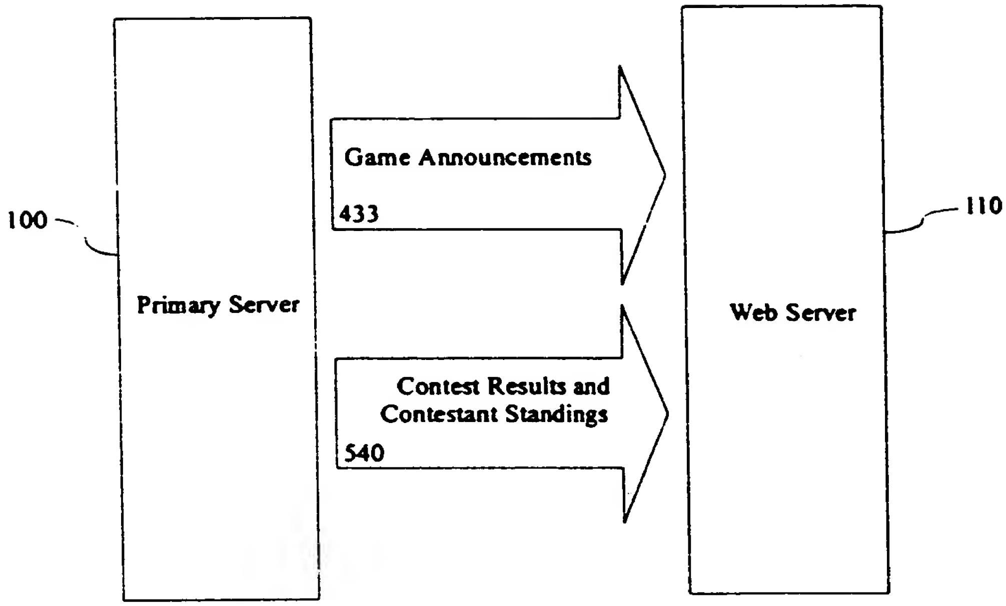

100
Primary Server
Game Announcements
433
Contest Results and
Contestant Standings
540
Web Server
110

Figure 3G

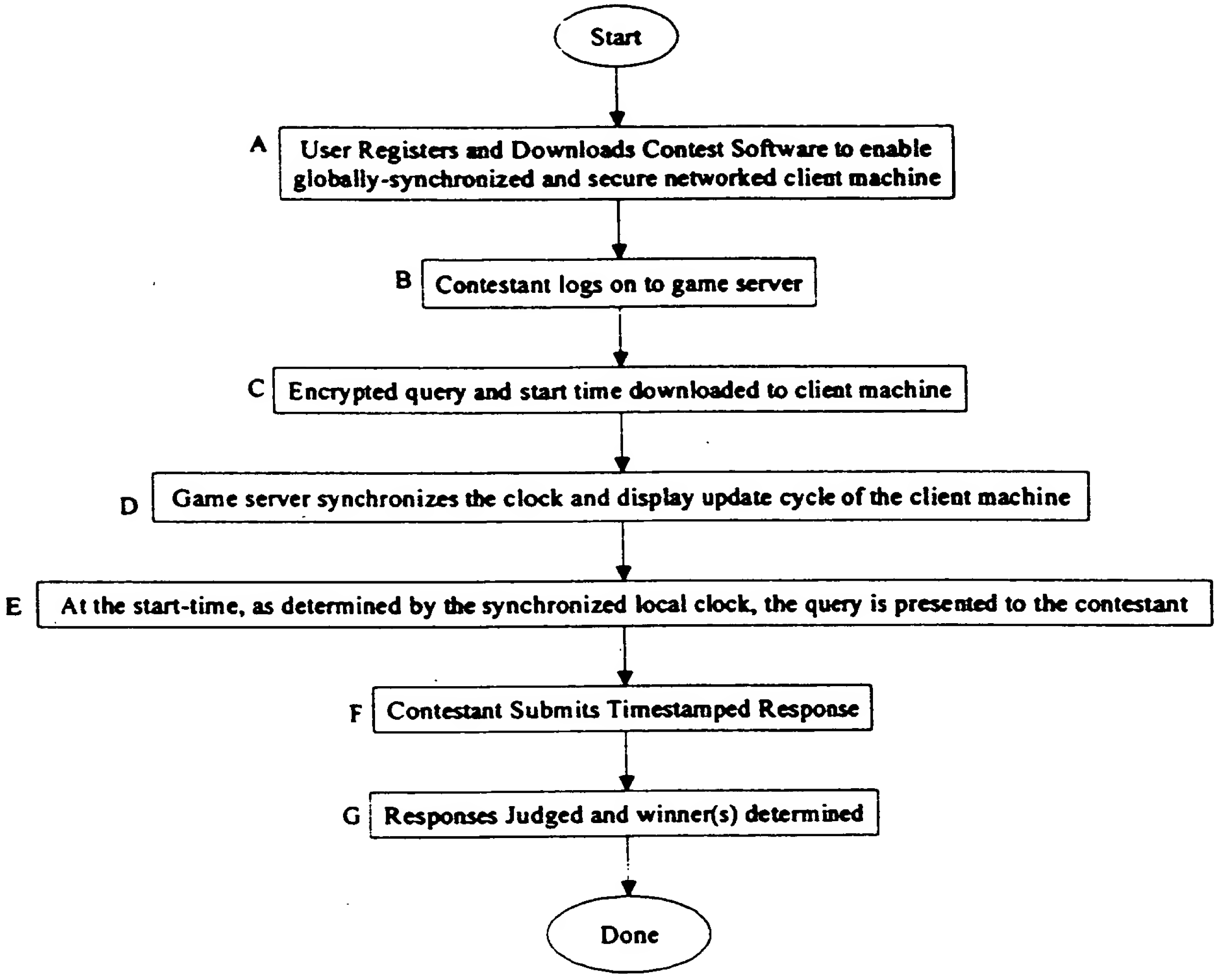

Start
A
User Registers and Downloads Contest Software to enable globally-synchronized and secure networked client machine
B
Contestant logs on to game server
C
Encrypted query and start time downloaded to client machine
D
Game server synchronizes the clock and display update cycle of the client machine
E
At the start-time, as determined by the synchronized local clock, the query is presented to the contestant
F
Contestant Submits Timestamped Response
G
Responses Judged and winner(s) determined
Done

Figure 4

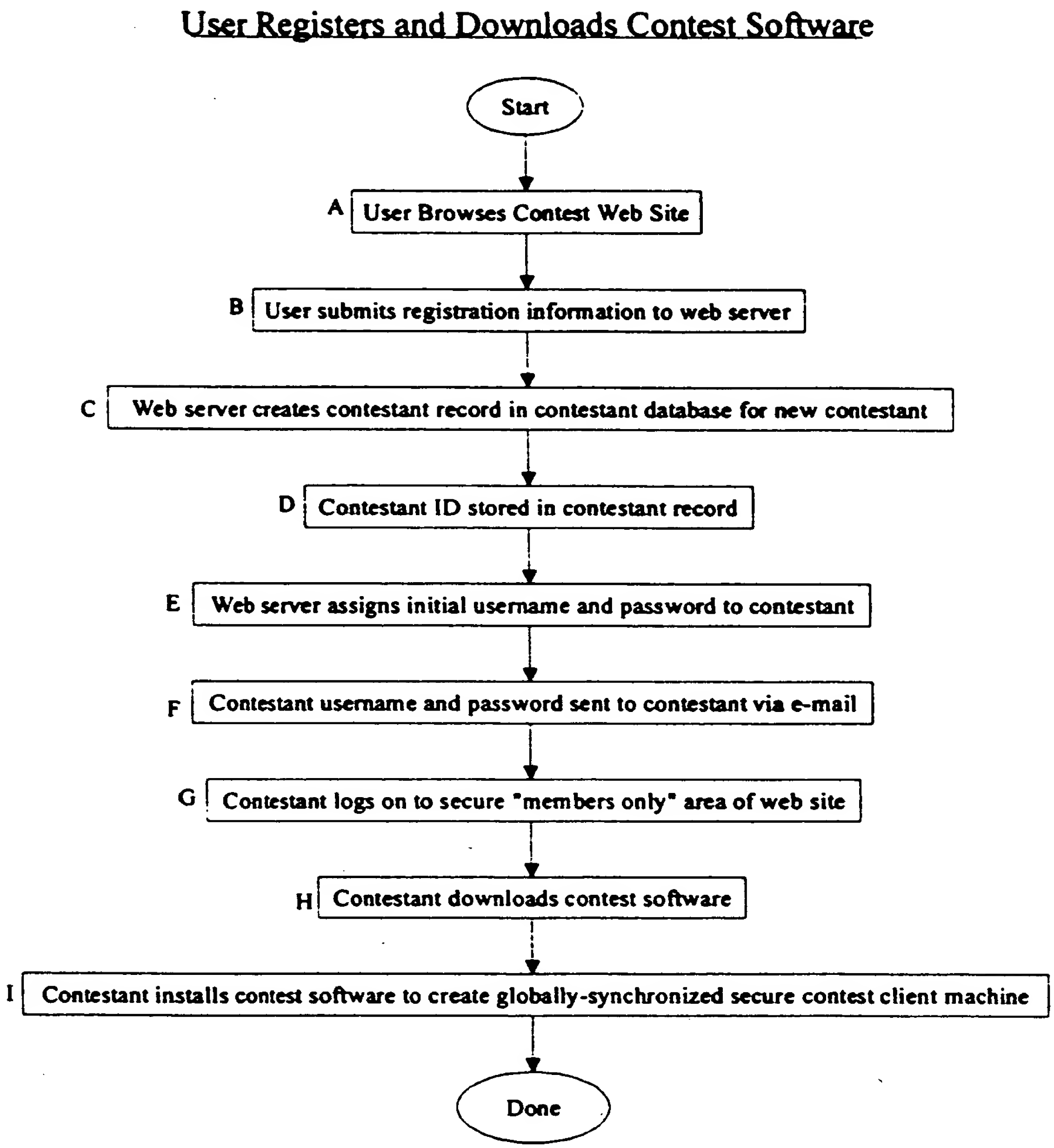

User Registers and Downloads Contest Software
Start
A
User Browses Contest Web Site
B
User submits registration information to web server
C
Web server creates contestant record in contestant database for new contestant
D
Contestant ID stored in contestant record
E
Web server assigns initial username and password to contestant
F
Contestant username and password sent to contestant via e-mail
G
Contestant logs on to secure "members only" area of web site
H
Contestant downloads contest software
I
Contestant installs contest software to create globally-synchronized secure contest client machine
Done

Figure 4A

Contestant logs on to game server

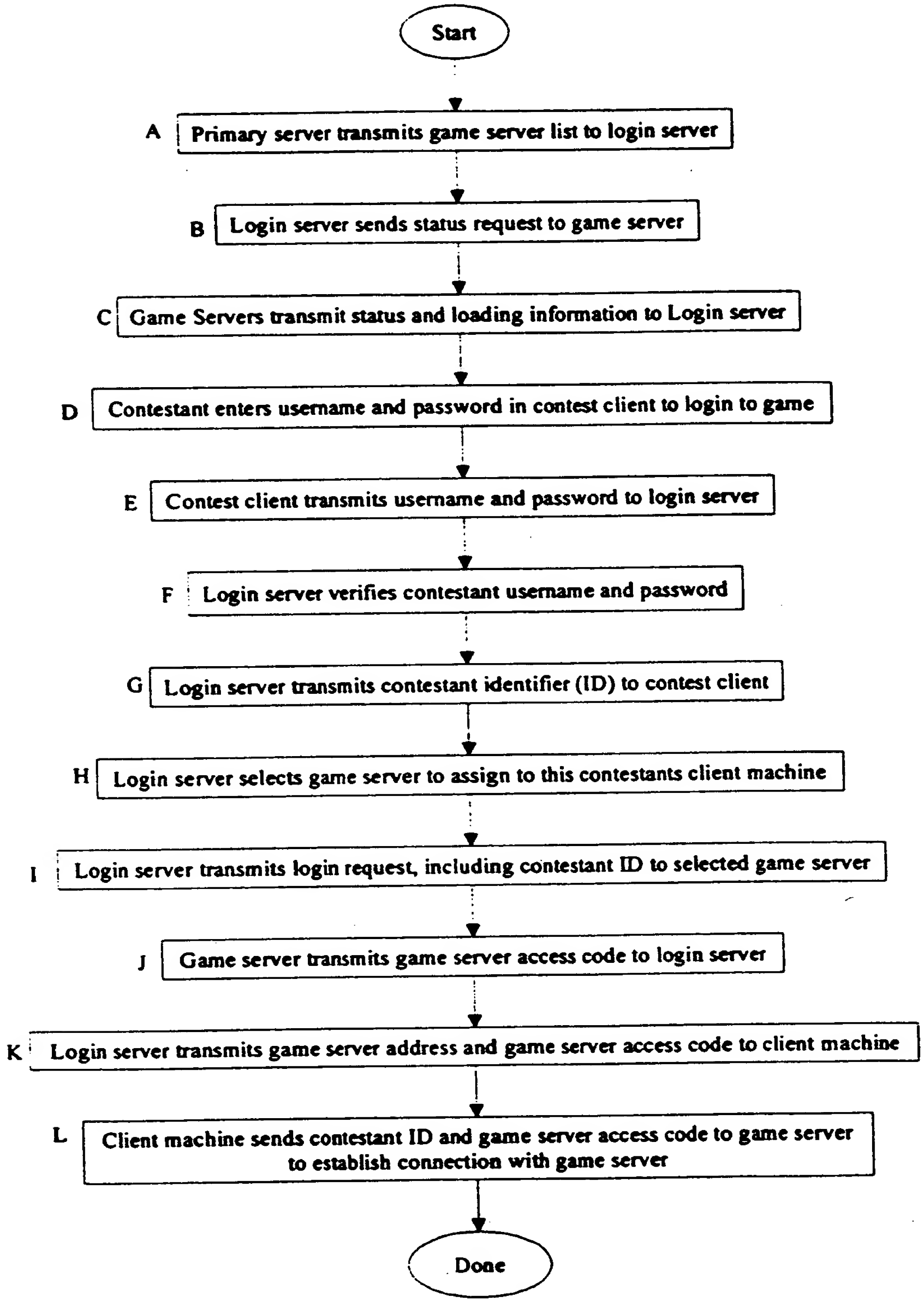


Figure 4B

Encrypted query and start-time downloaded to client machine

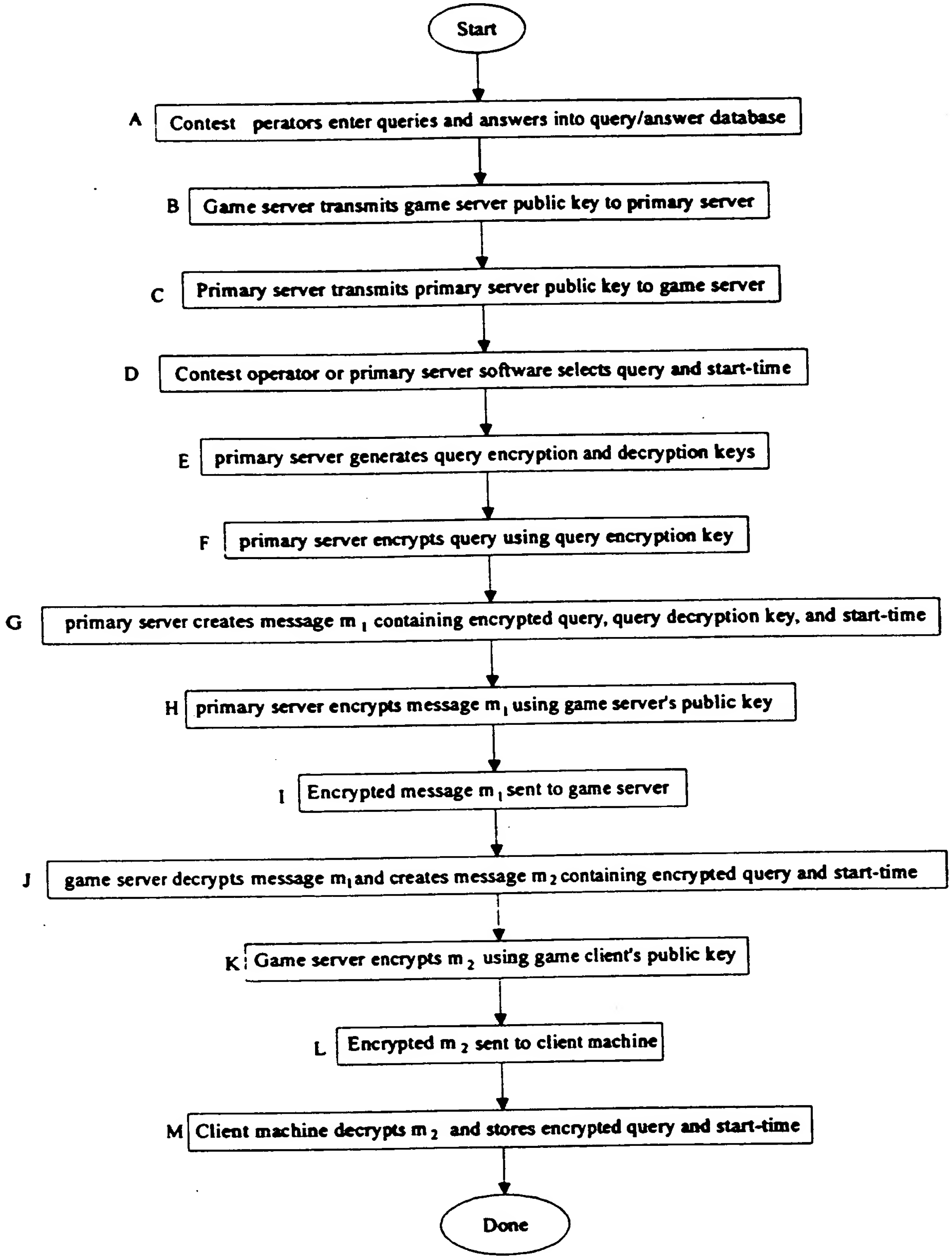


Figure 4C

Client machine clock characterized and display update cycle synchronized with global clock

(Client Machine With Basic GSU)

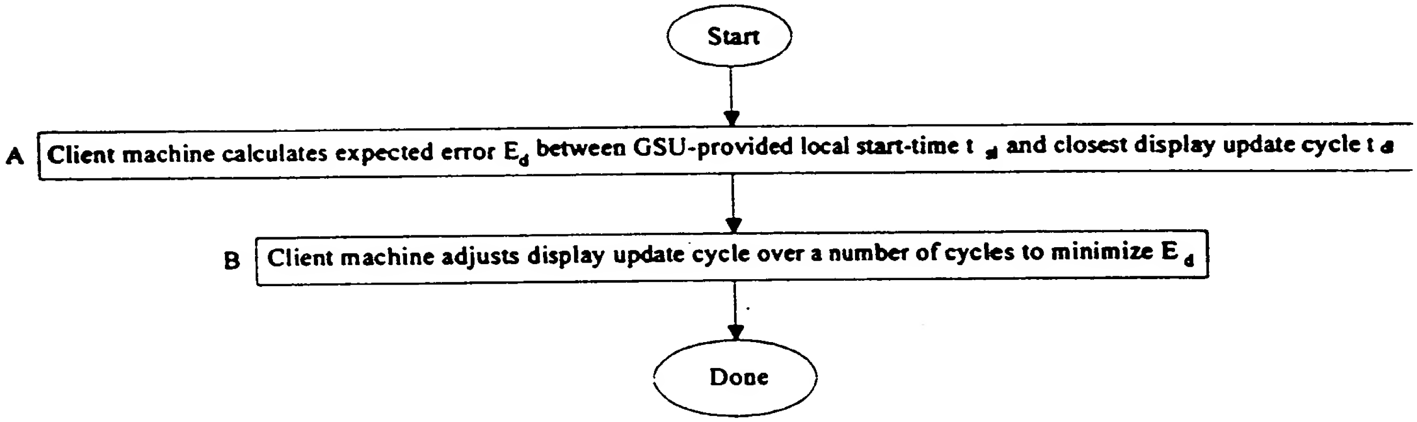


Figure 4D1

Client machine clock characterized and display update cycle synchronized with global clock

(Client Machine With Enhanced GSU)

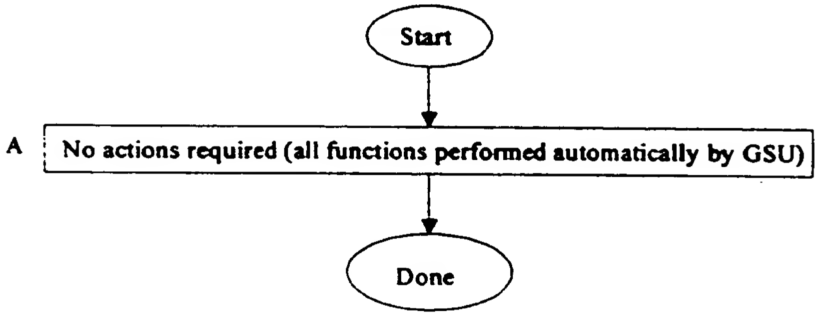


Figure 4D2

Client machine clock characterized and display update cycle synchronized with global clock

(Client Machine Without GSU)

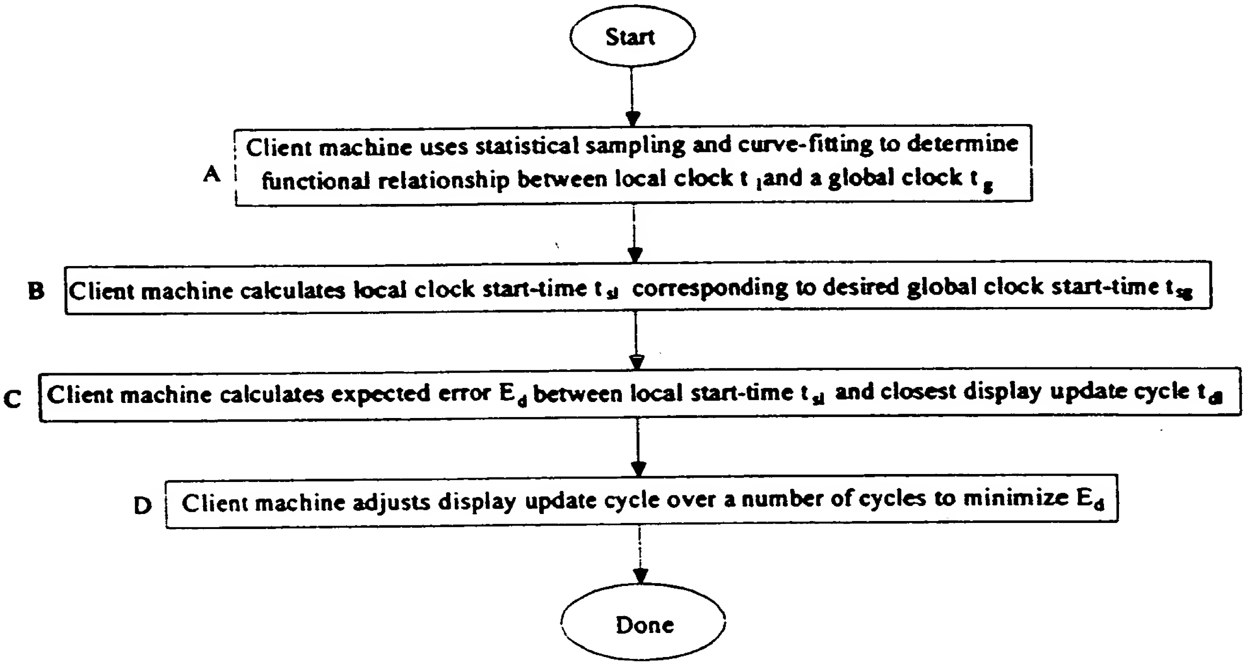


Figure 4D3

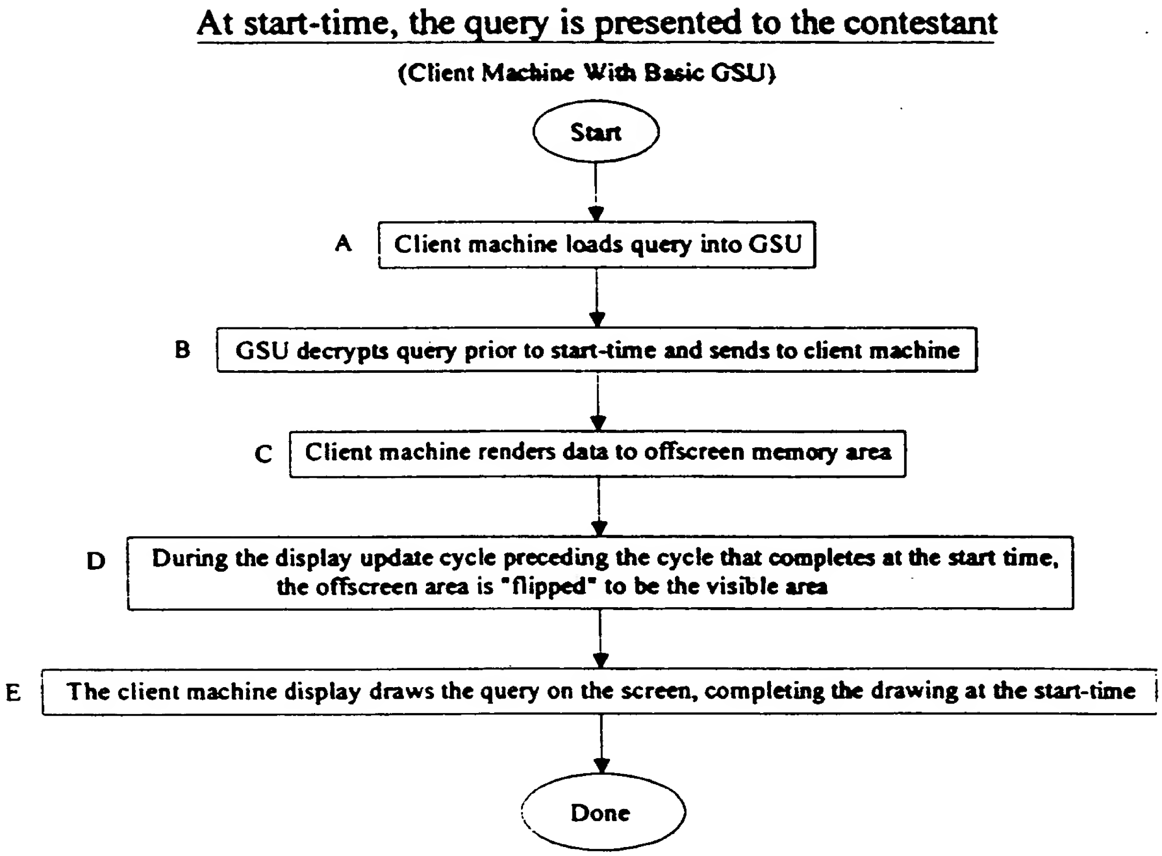

At start-time, the query is presented to the contestant
(Client Machine With Basic GSU)
Start
A
Client machine loads query into GSU
B
GSU decrypts query prior to start-time and sends to client machine
C
Client machine renders data to offscreen memory area
D
During the display update cycle preceding the cycle that completes at the start time, the offscreen area is "flipped" to be the visible area
E
The client machine display draws the query on the screen, completing the drawing at the start-time
Done

Figure 4E1

At start-time, the query is presented to the contestant

(Client Machine With Enhanced GSU)

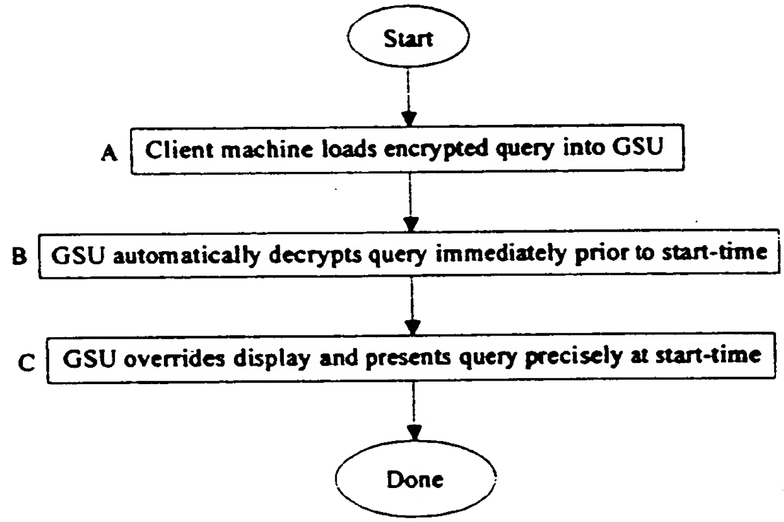


Figure 4E2

At start-time, the query is presented to the contestant

(Client Machine Without GSU)

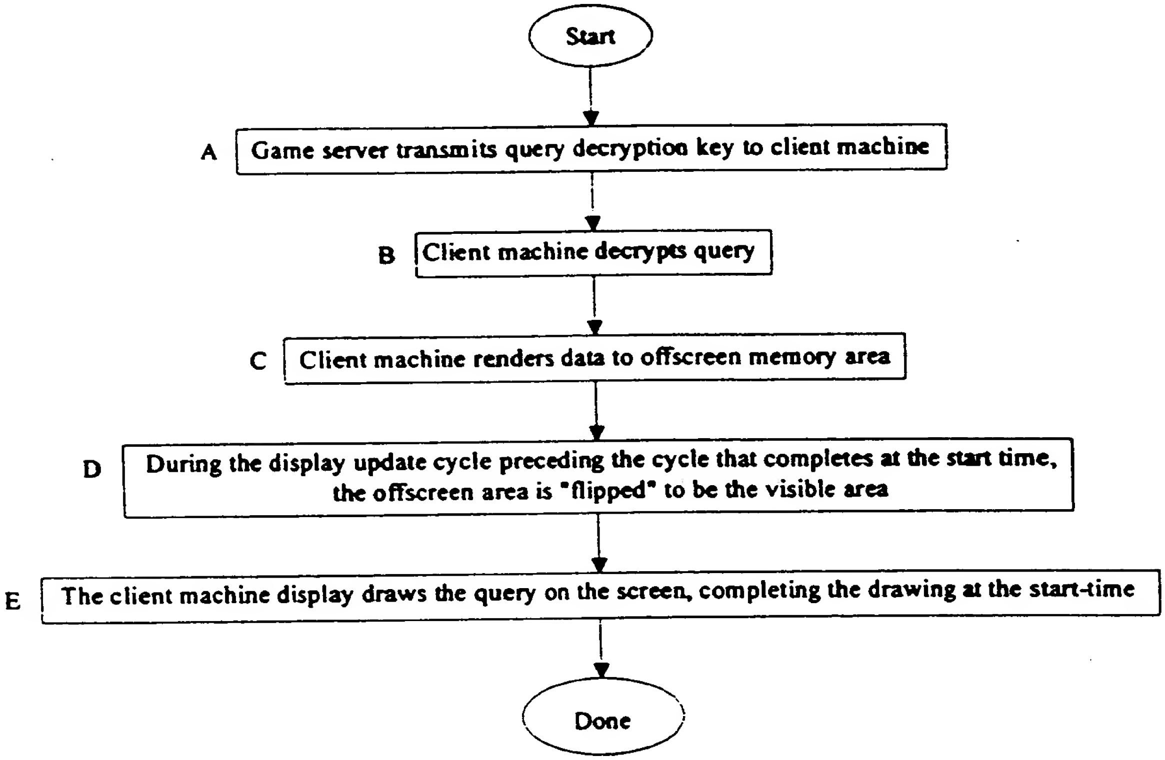


Figure 4E3

Contestant submits timestamped response

(Client Machine With Basic GSU)

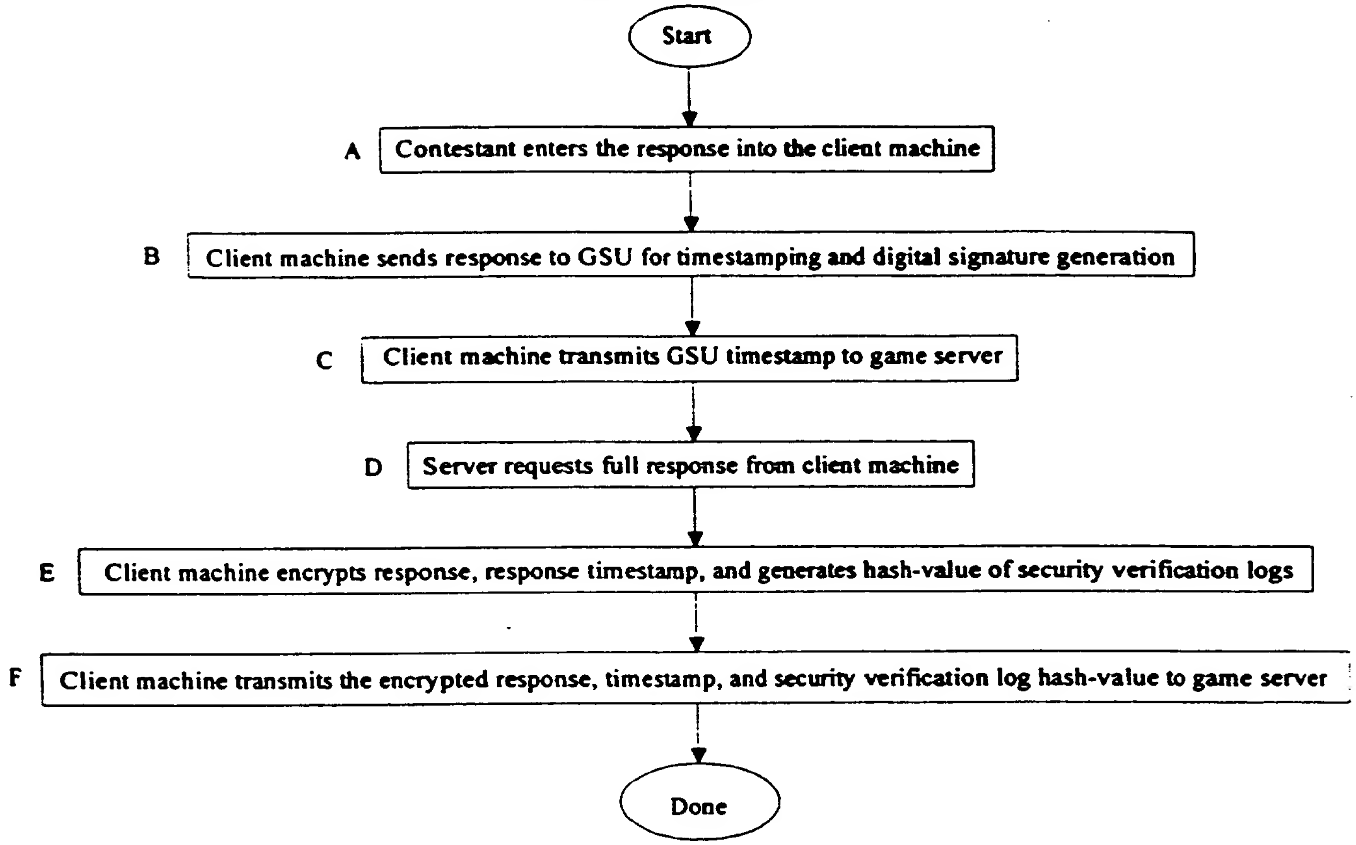


Figure 4F1

Contestant submits timestamped response

(Client Machine With Enhanced GSU)

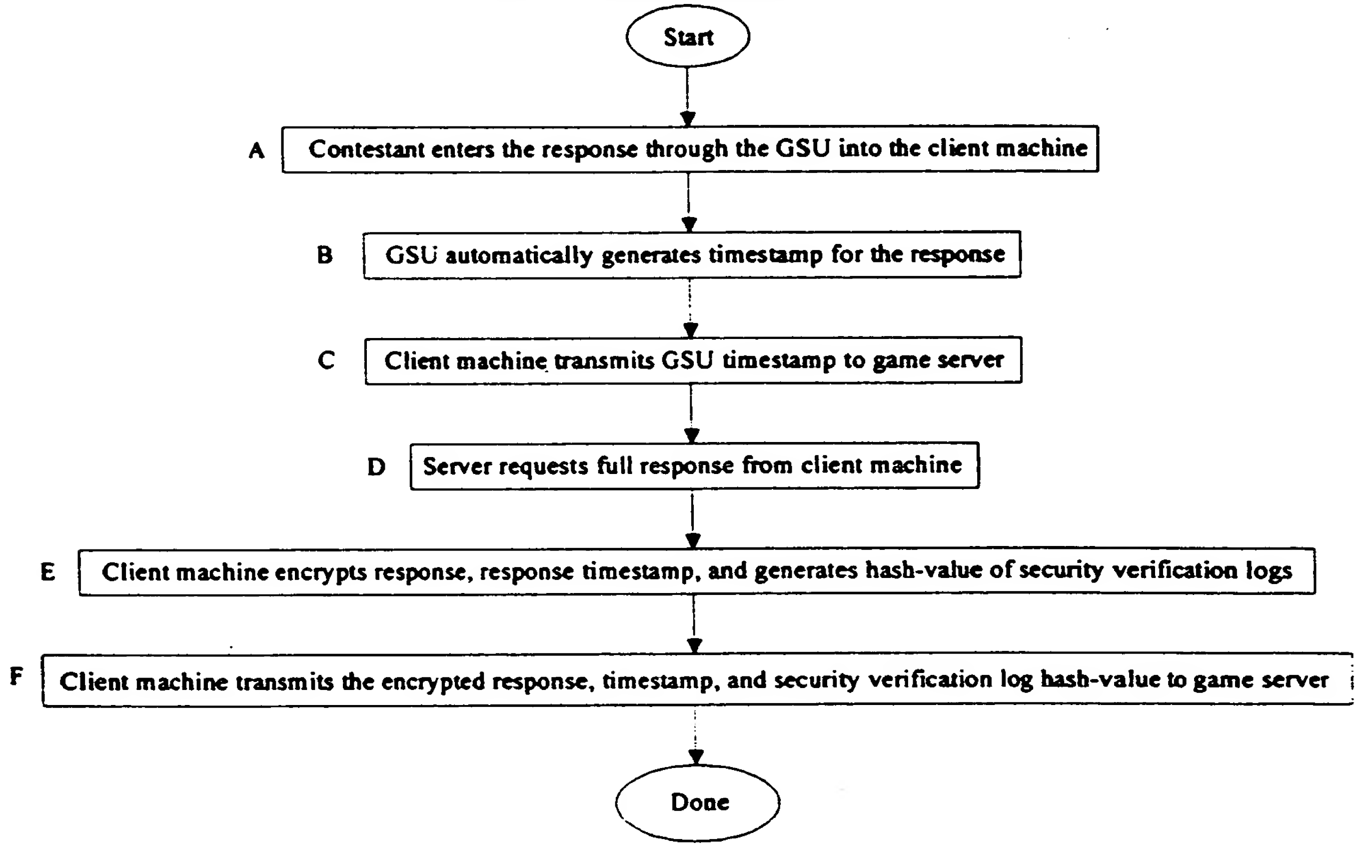


Figure 4F2

Contestant submits timestamped response

(Client Machine Without GSU)

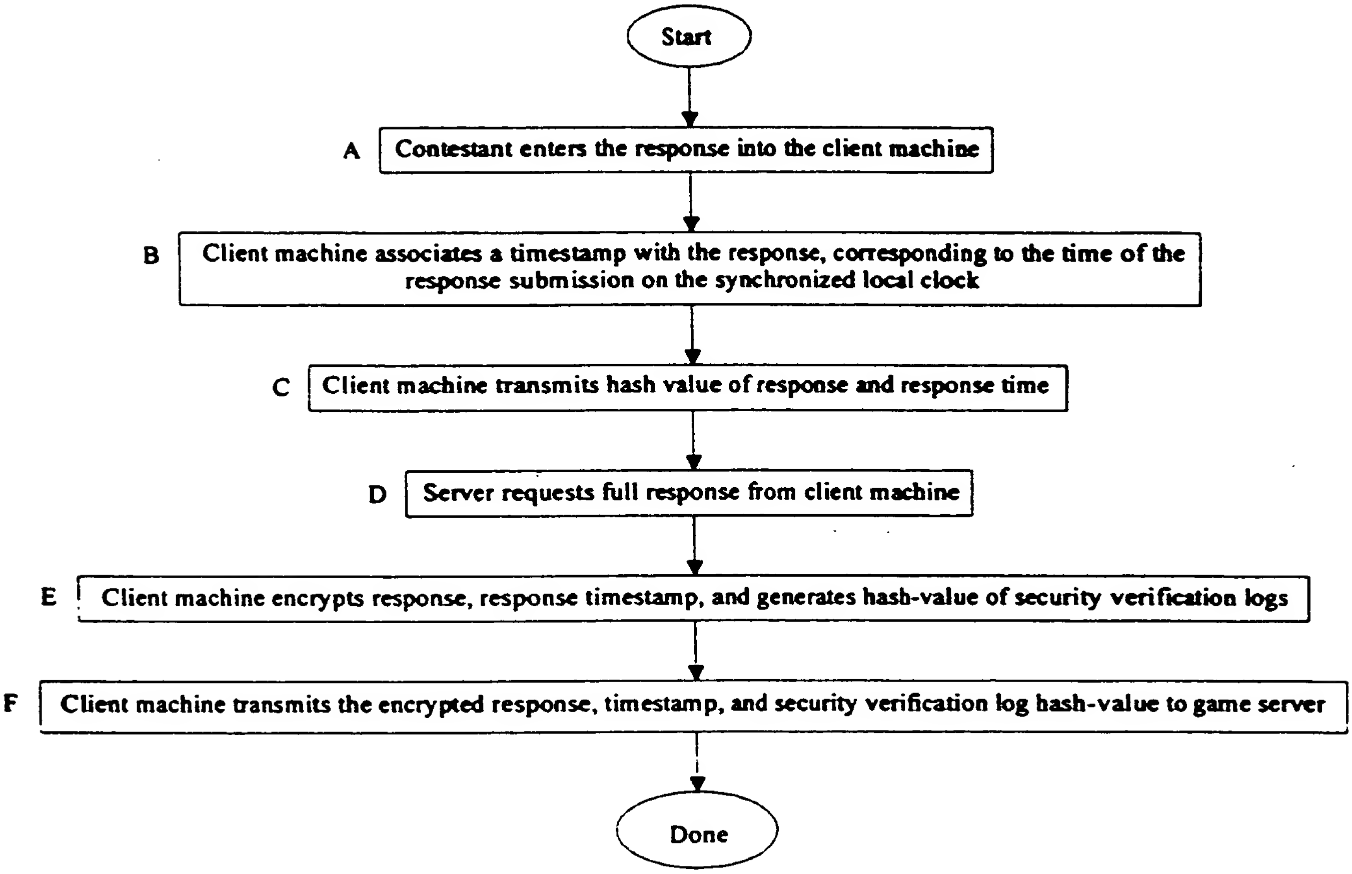


Figure 4F3

Res[illegible]ses Judged and Winners Determ[illegible]d

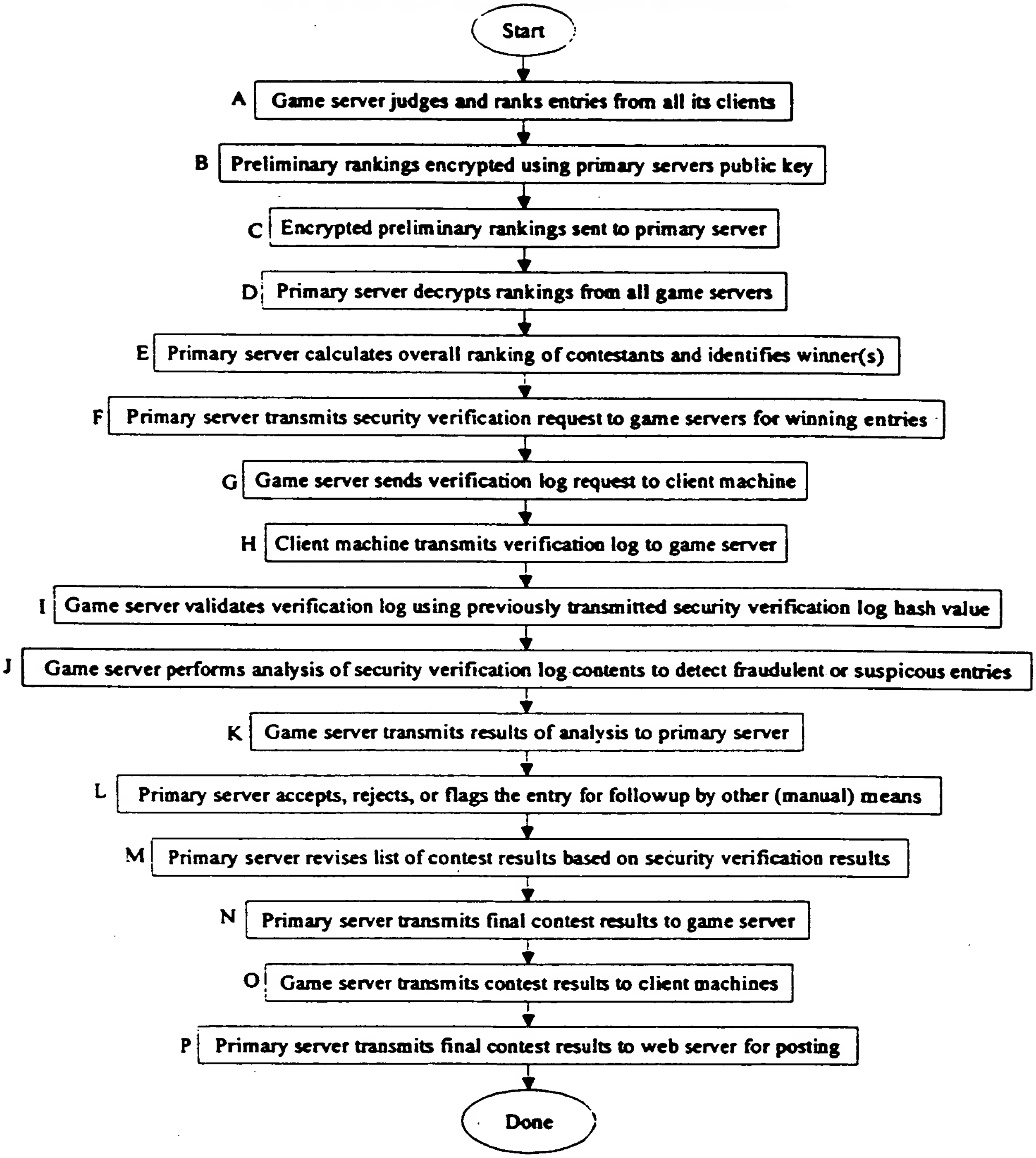


Figure 4G

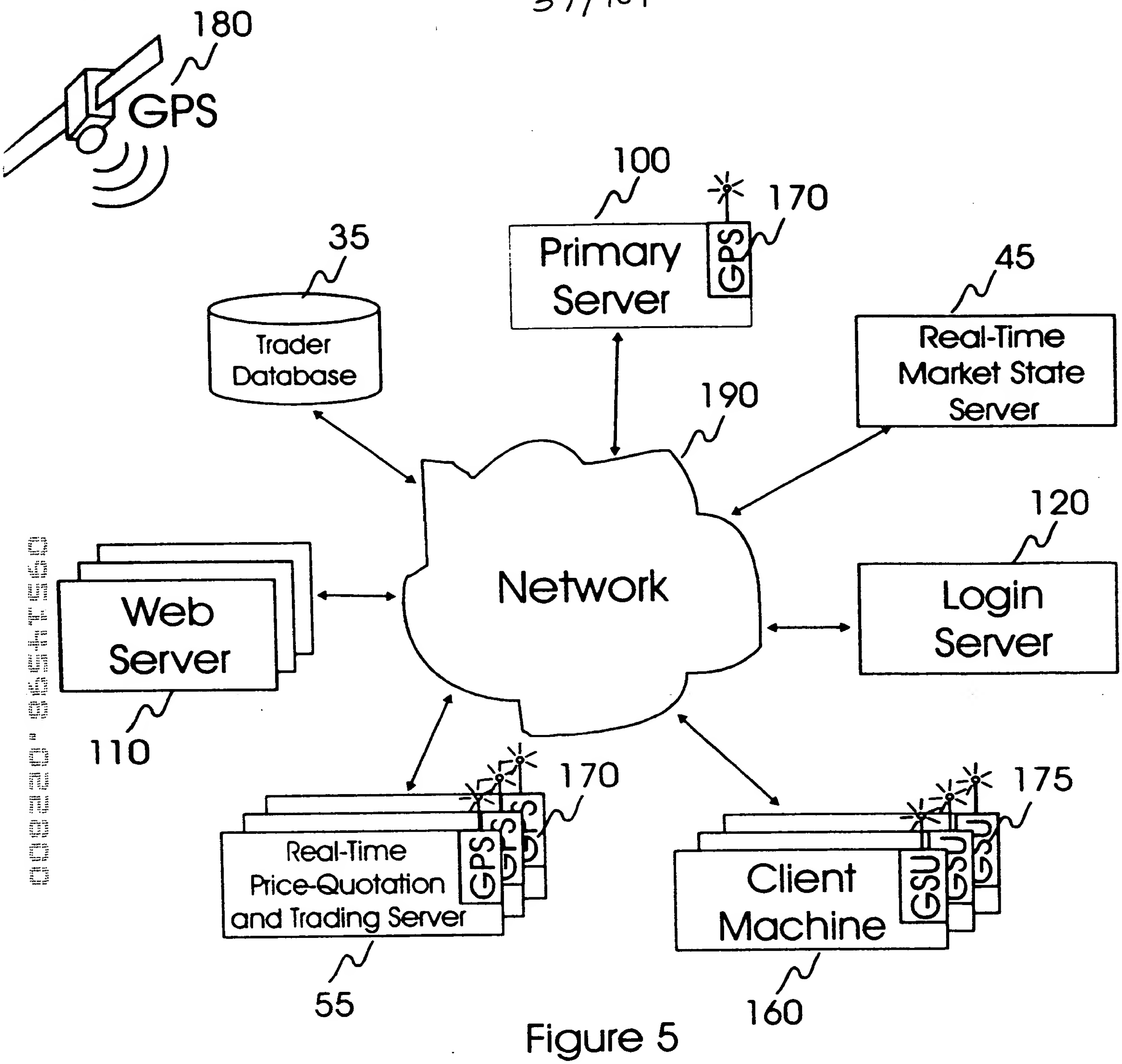

180
GPS
100
170
GPS
Primary Server
35
Trader Database
45
Real-Time Market State Server
190
Network
120
Login Server
Web Server
110
170
GPS
GPS
GPS
Real-Time Price-Quotation and Trading Server
55
175
GSU
GSU
GSU
Client Machine
160

Figure 5

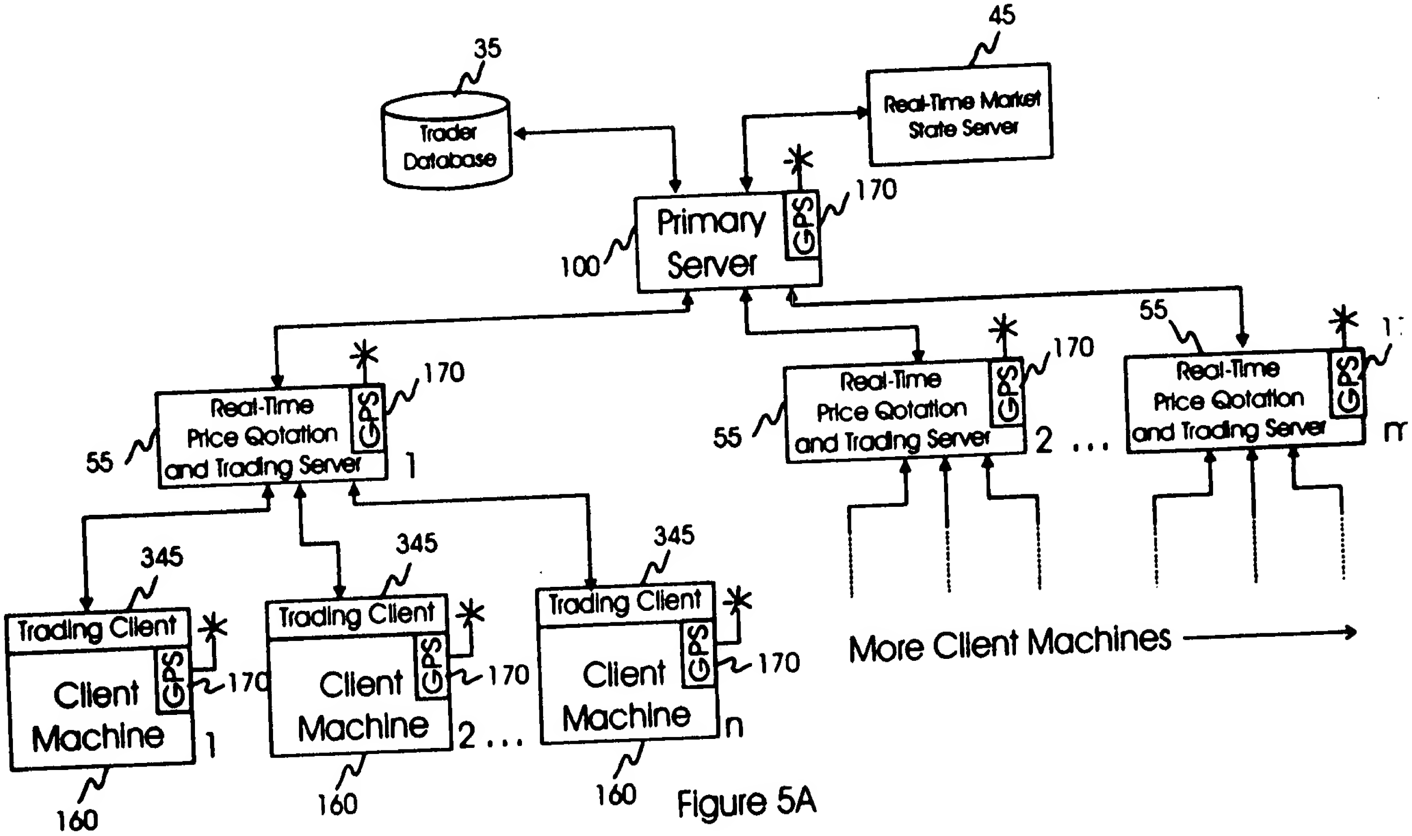

35
Trader Database
45
Real-Time Market State Server
100
Primary Server
GPS
170
55
Real-Time Price Qotation and Trading Server
1
2 . . .
m
345
Trading Client
Client Machine
160
n
More Client Machines

Figure 5A

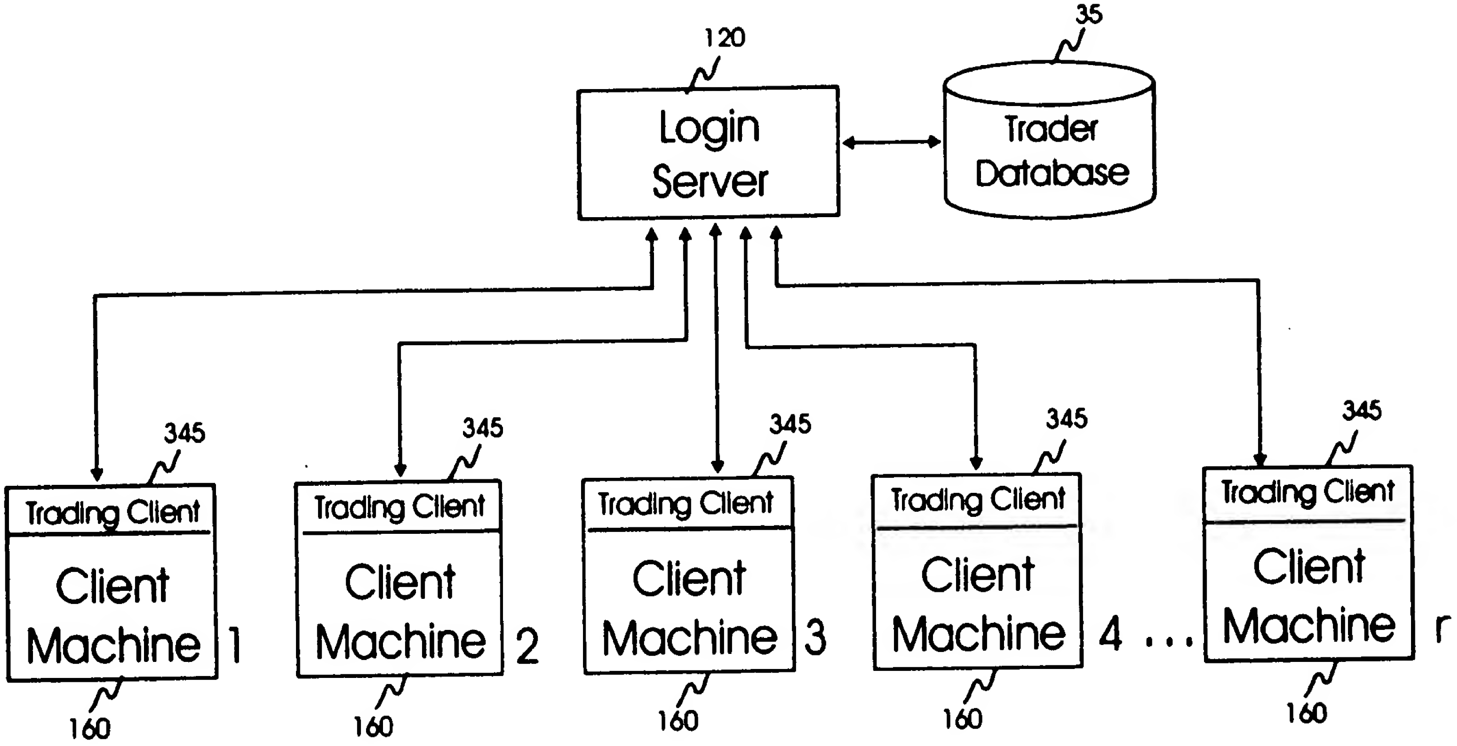
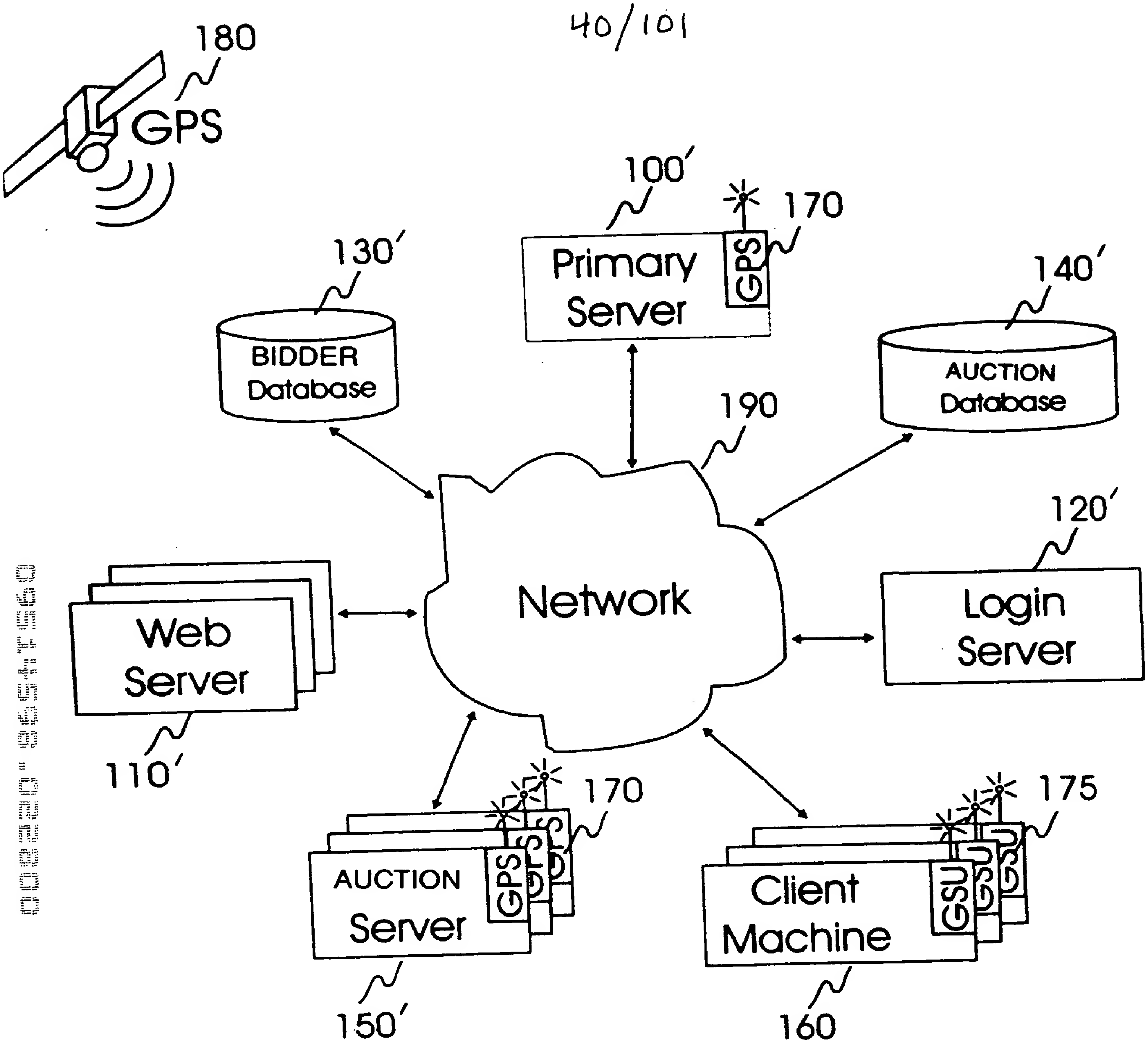
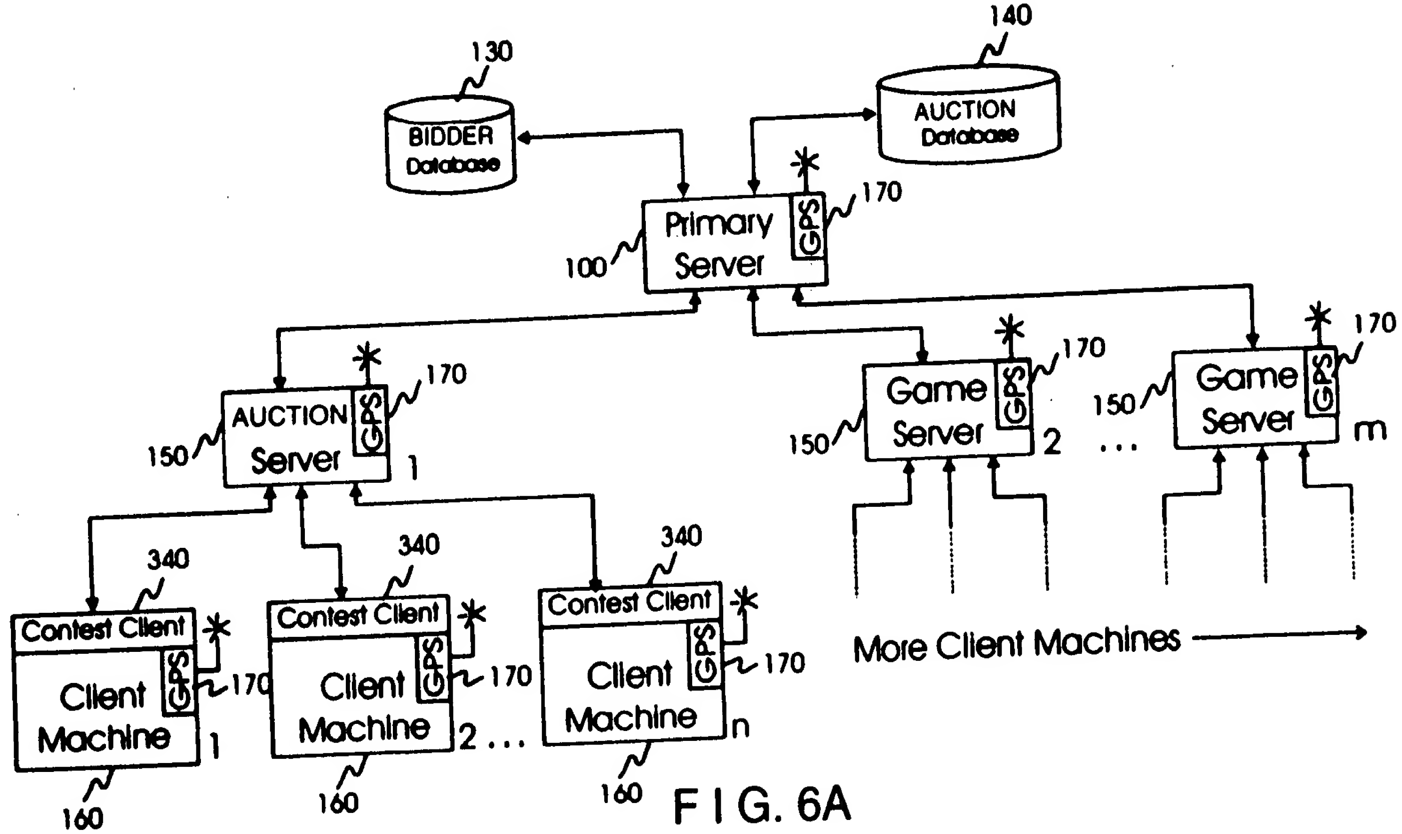

120
Login Server
35
Trader Database
345
Trading Client
Client Machine 1
160
345
Trading Client
Client Machine 2
160
345
Trading Client
Client Machine 3
160
345
Trading Client
Client Machine 4 . . .
160
345
Trading Client
Client Machine r
160

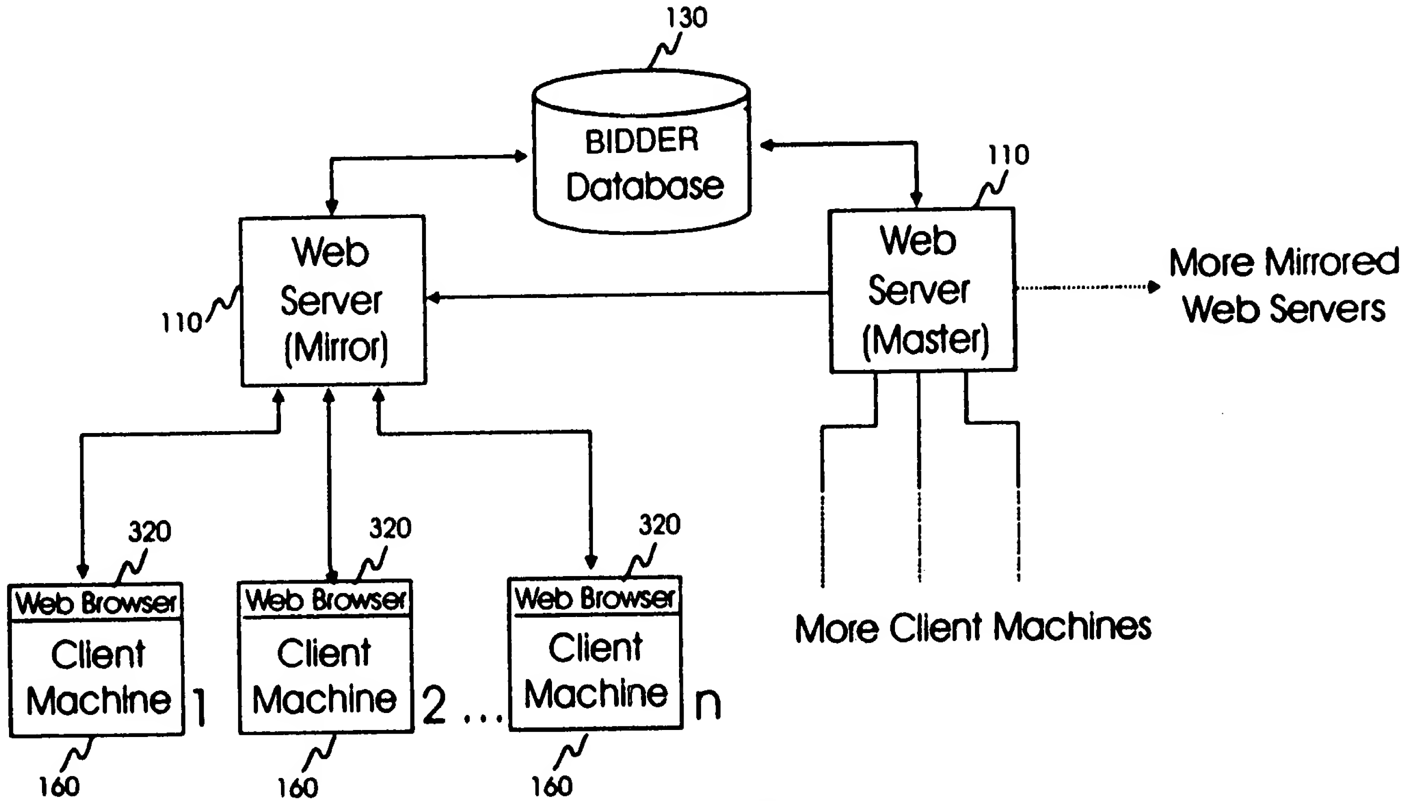
Figure 5B


180
GPS
100′
170
Primary Server
GPS
130′
BIDDER Database
140′
AUCTION Database
190
Network
120′
Login Server
Web Server
110′
170
AUCTION Server
GPS
150′
175
Client Machine
GSU
160

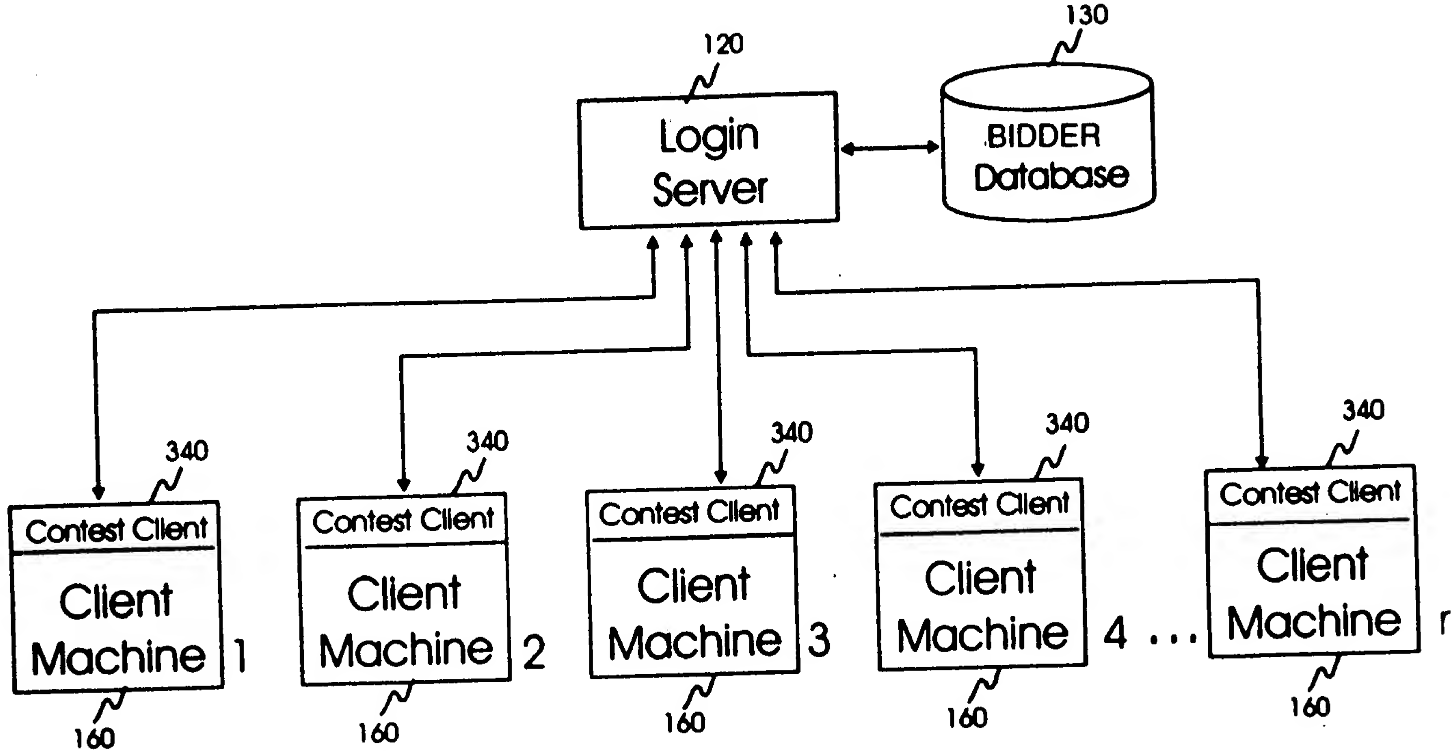
F I G. 6


130
BIDDER Database
140
AUCTION Database
100
Primary Server
GPS
170
150
AUCTION Server
GPS
170
1
150
Game Server
GPS
170
2
...
150
Game Server
GPS
170
m
340
Contest Client
Client Machine
GPS
170
1
160
340
Contest Client
Client Machine
GPS
170
2 ...
160
340
Contest Client
Client Machine
GPS
170
n
160
More Client Machines

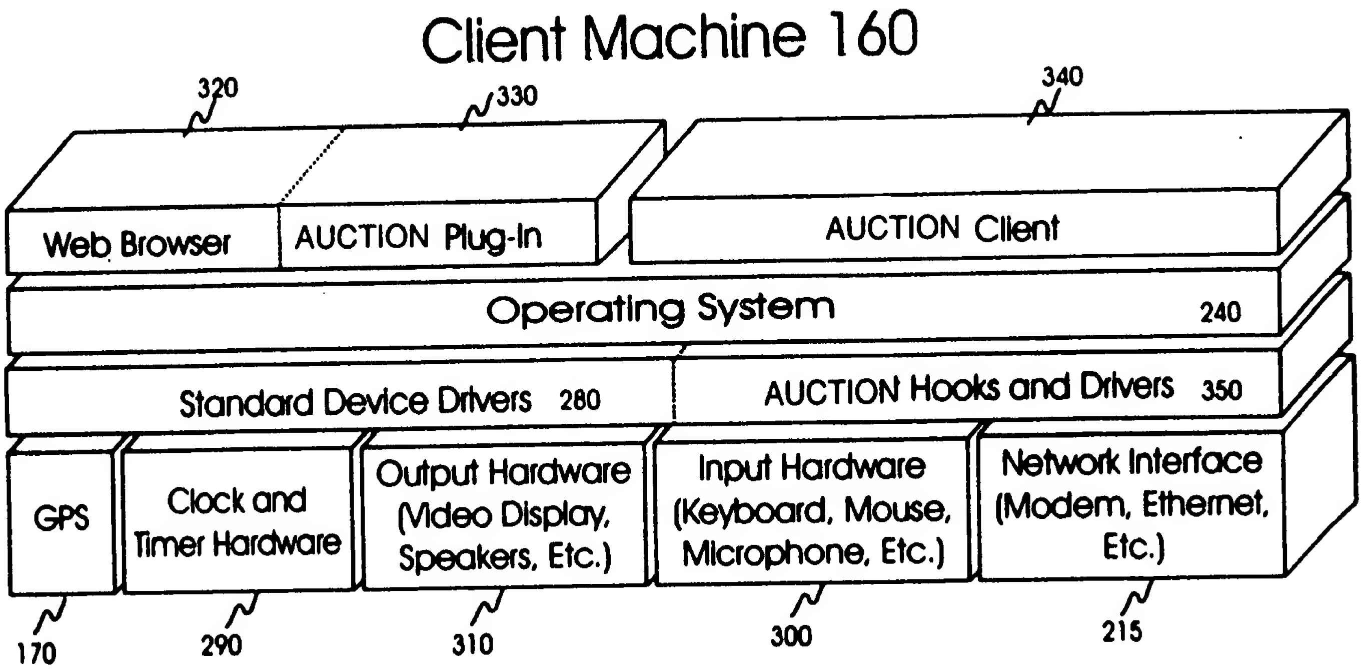
F I G. 6A


130
BIDDER
Database
110
Web
Server
(Master)
More Mirrored
Web Servers
110
Web
Server
(Mirror)
320
Web Browser
Client
Machine
1
160
320
Web Browser
Client
Machine
2 ...
160
320
Web Browser
Client
Machine
n
160
More Client Machines

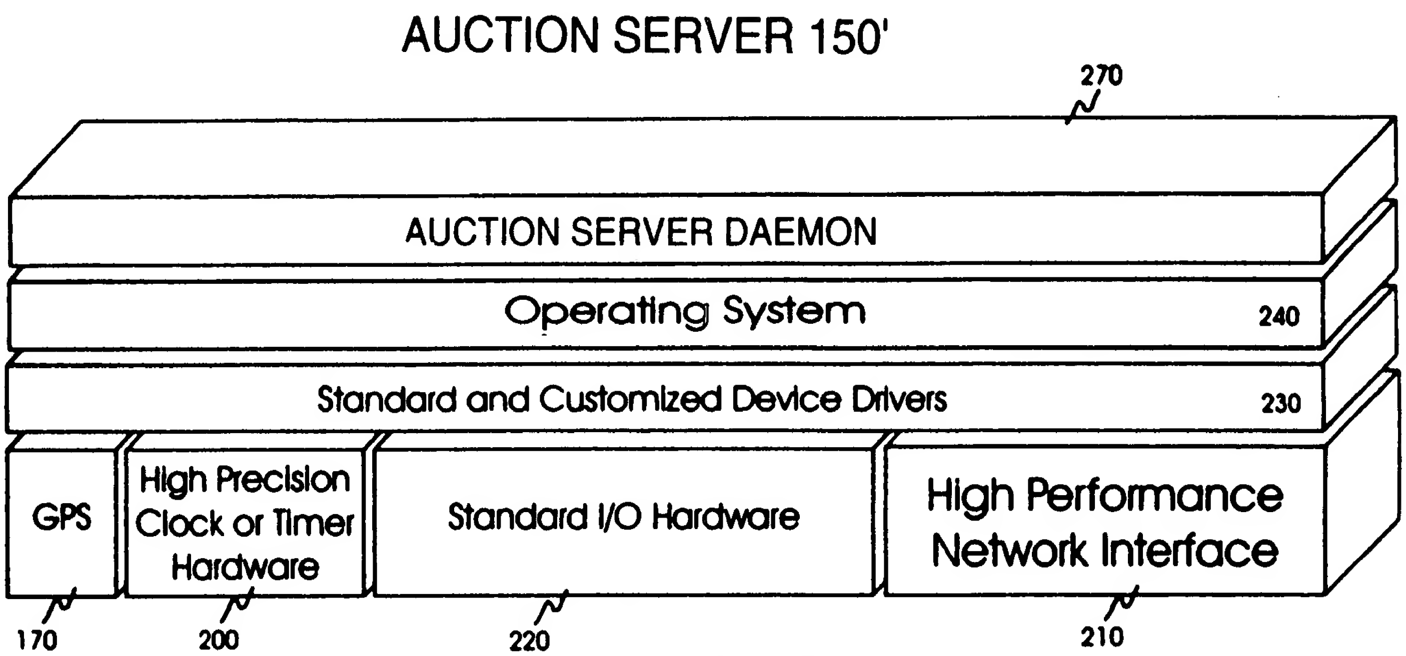
F I G. 6B


120
Login Server
130
BIDDER Database
340
Contest Client
Client Machine
1
2
3
4 . . .
r
160

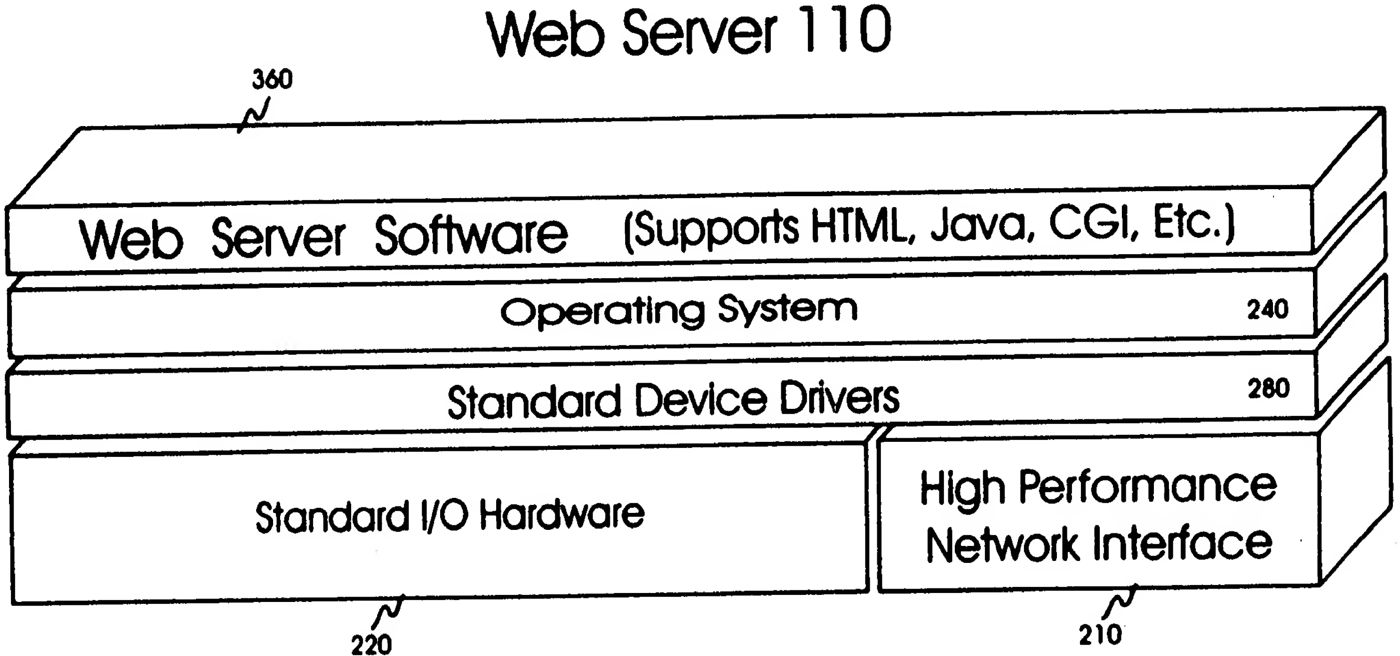
F I G. 6C


Client Machine 160
320
330
340
Web Browser
AUCTION Plug-In
AUCTION Client
Operating System
240
Standard Device Drivers
280
AUCTION Hooks and Drivers
350
GPS
Clock and Timer Hardware
Output Hardware (Video Display, Speakers, Etc.)
Input Hardware (Keyboard, Mouse, Microphone, Etc.)
Network Interface (Modem, Ethernet, Etc.)
170
290
310
300
215

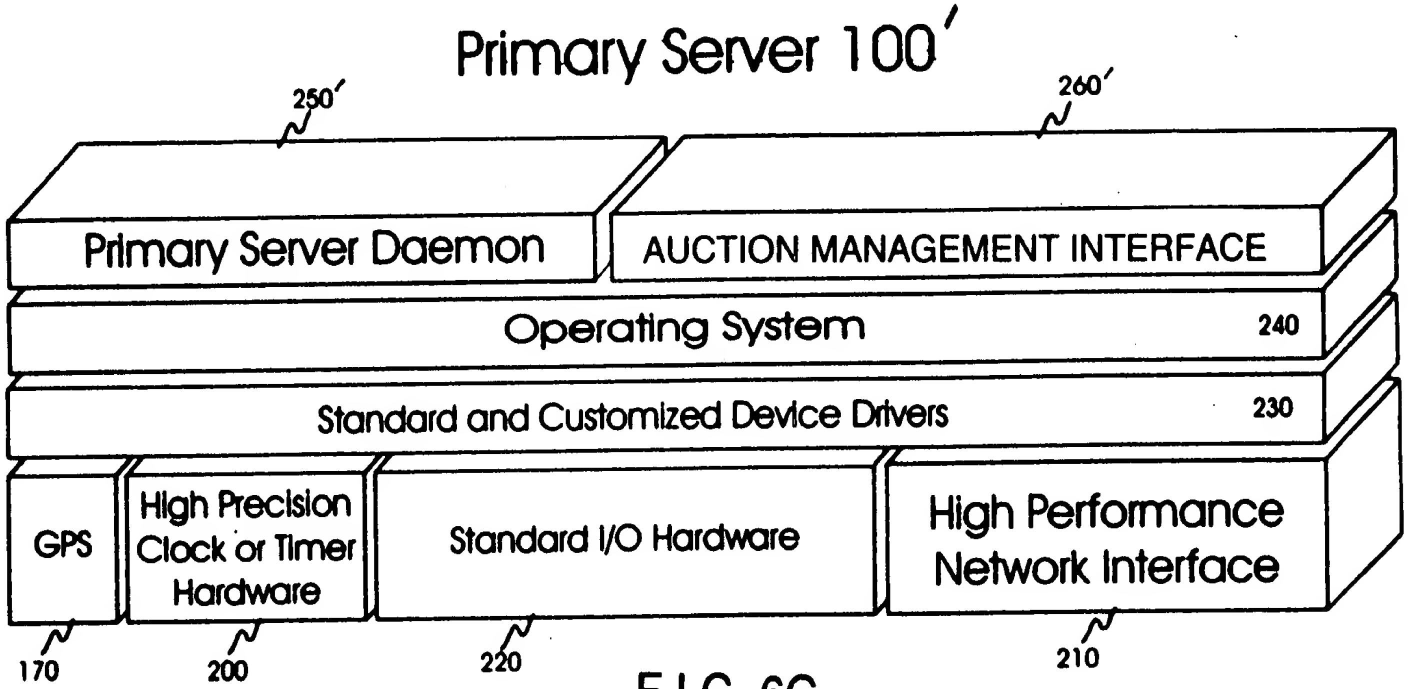
F I G. 6D


AUCTION SERVER 150'
270
AUCTION SERVER DAEMON
Operating System
240
Standard and Customized Device Drivers
230
GPS
High Precision Clock or Timer Hardware
Standard I/O Hardware
High Performance Network Interface
170
200
220
210

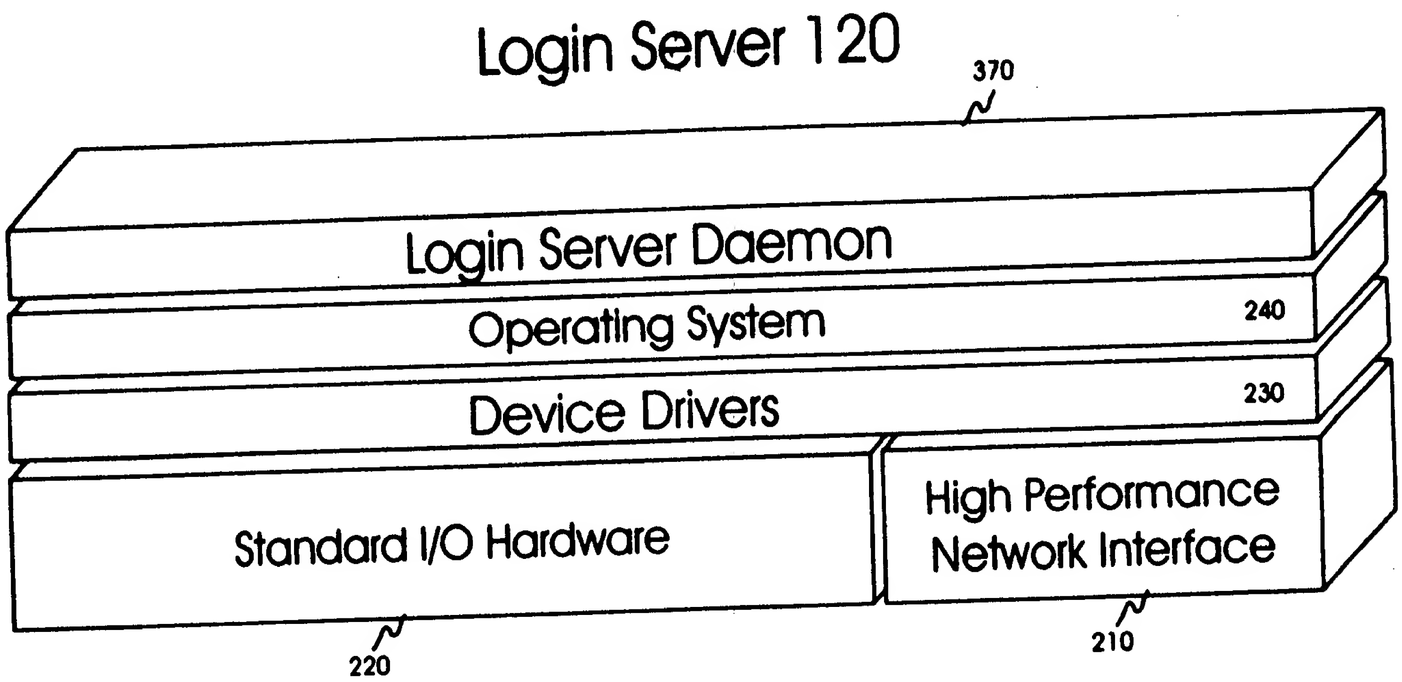
F I G. 6E


Web Server 110
360
Web Server Software (Supports HTML, Java, CGI, Etc.)
Operating System
240
Standard Device Drivers
280
Standard I/O Hardware
High Performance Network Interface
220
210

F I G. 6F


Primary Server 100'
250'
260'
Primary Server Daemon
AUCTION MANAGEMENT INTERFACE
Operating System
240
Standard and Customized Device Drivers
230
GPS
High Precision Clock or Timer Hardware
Standard I/O Hardware
High Performance Network Interface
170
200
220
210

F I G. 6G


Login Server 120
370
Login Server Daemon
Operating System
240
Device Drivers
230
Standard I/O Hardware
High Performance
Network Interface
220
210

F I G. 6H

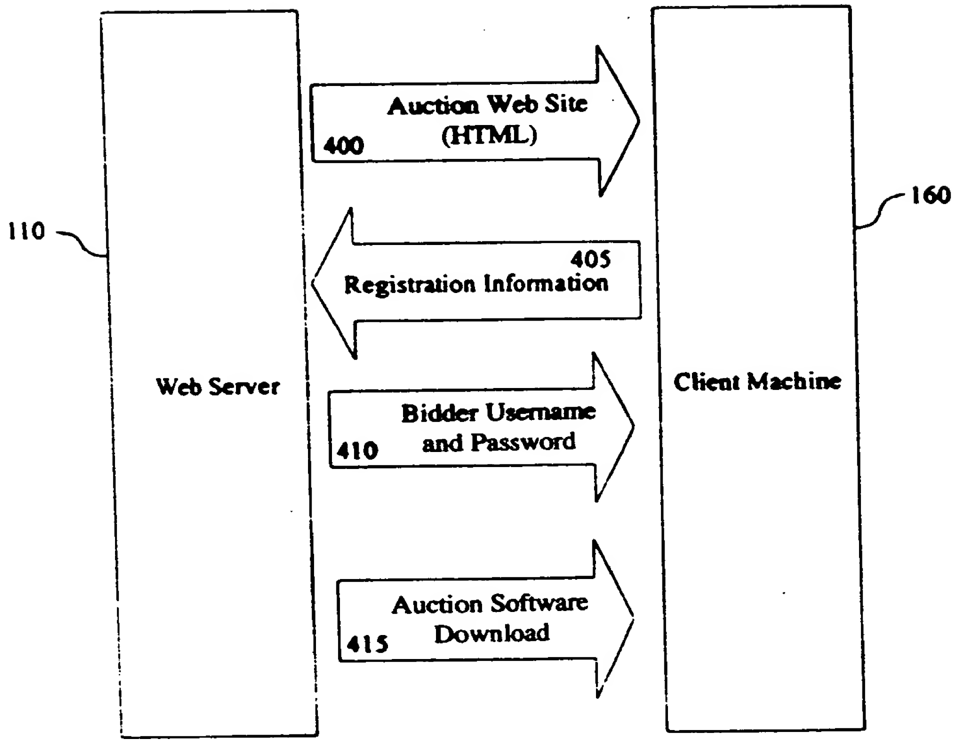

Web Server
110
Auction Web Site (HTML)
400
405
Registration Information
Bidder Username and Password
410
Auction Software Download
415
Client Machine
160

FIG. 7A

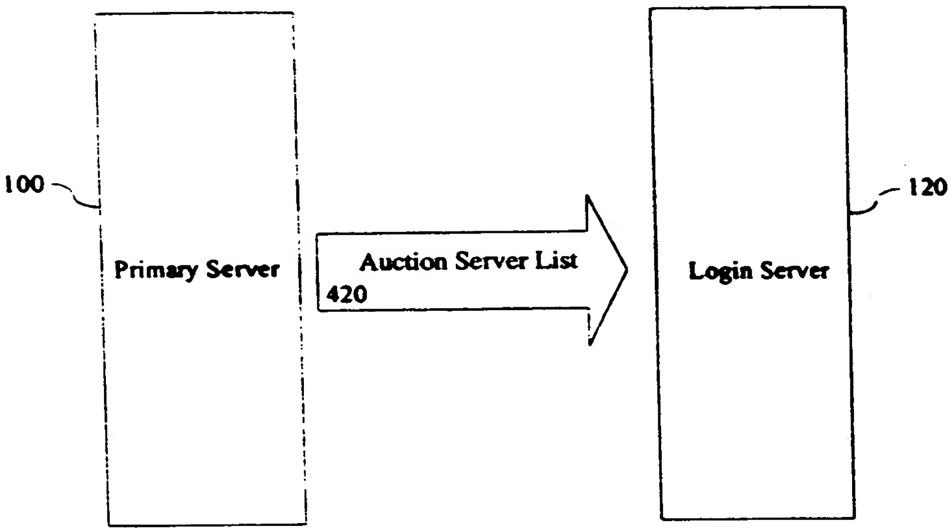

100
Primary Server
Auction Server List
420
Login Server
120

FIG. 7B

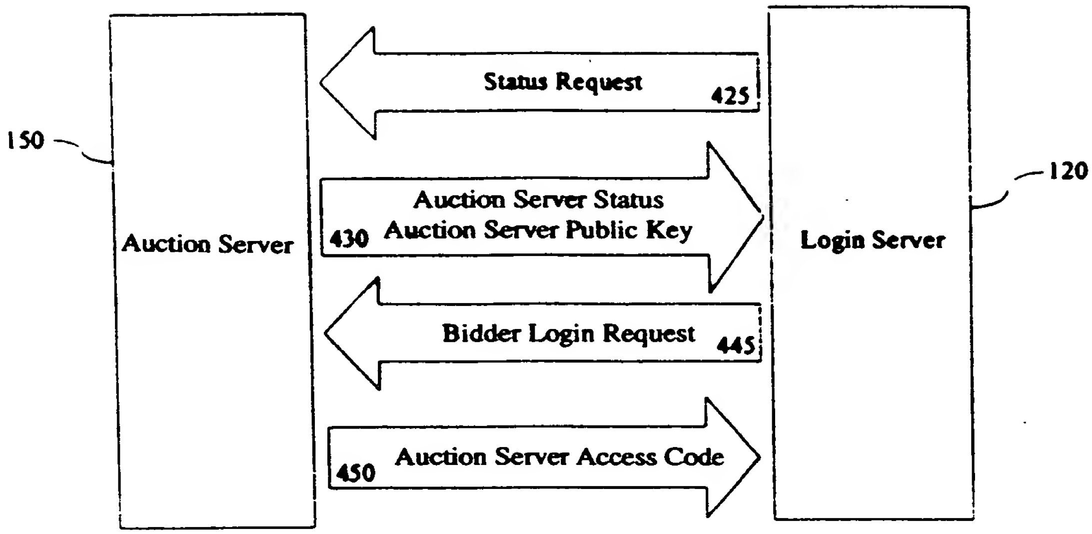

Status Request
425
150
Auction Server
Auction Server Status
Auction Server Public Key
430
Login Server
120
Bidder Login Request
445
Auction Server Access Code
450

FIG. 7C

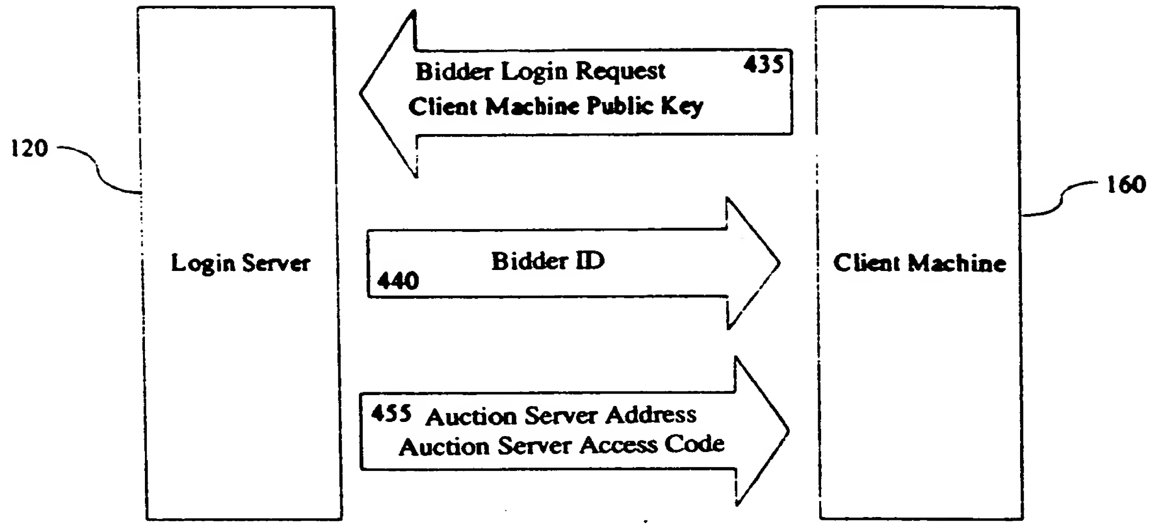

Bidder Login Request
Client Machine Public Key
435
120
Login Server
Bidder ID
440
Client Machine
160
455 Auction Server Address
Auction Server Access Code

FIG. 7D

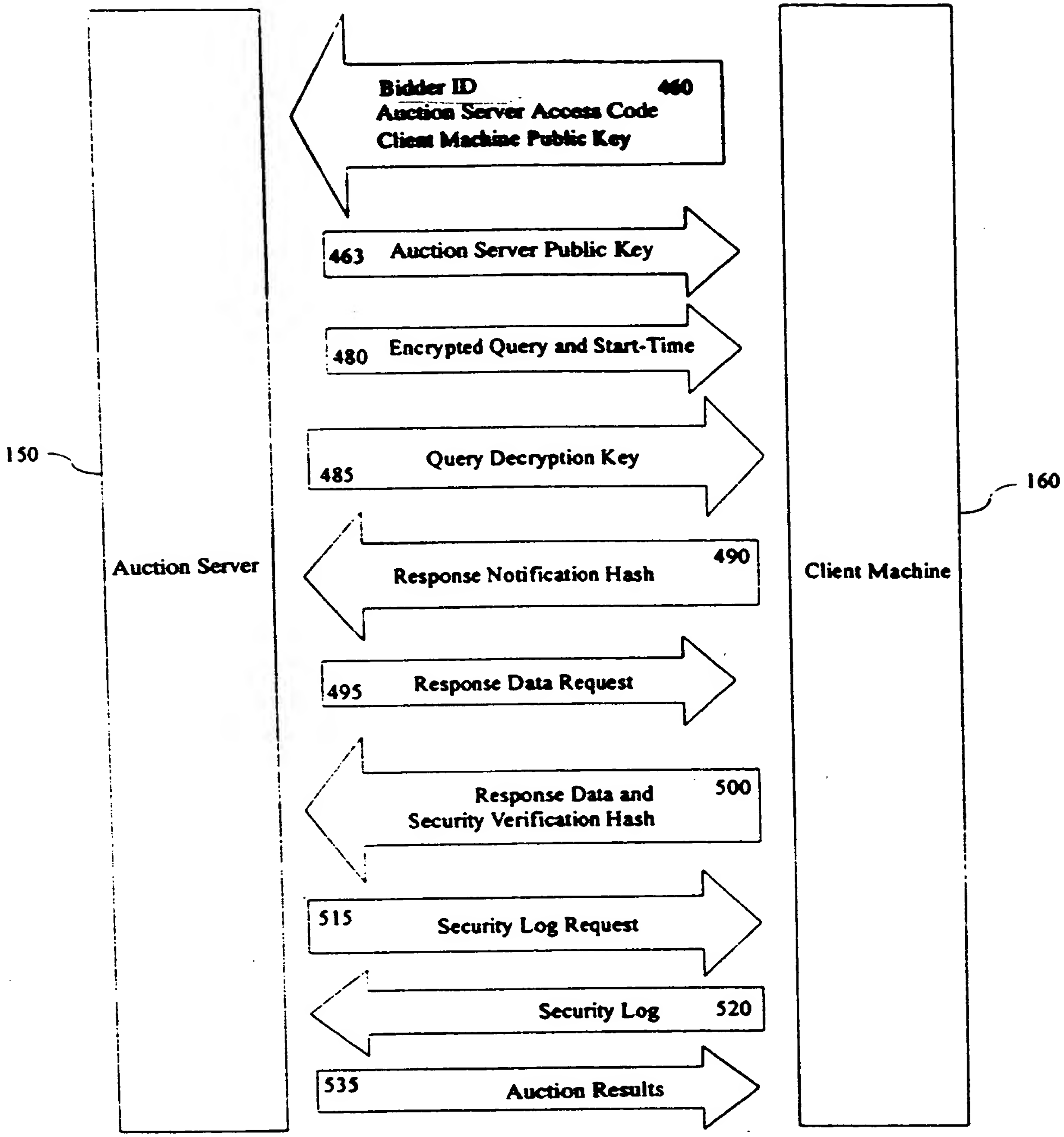

Bidder ID
460
Auction Server Access Code
Client Machine Public Key
463
Auction Server Public Key
480
Encrypted Query and Start-Time
485
Query Decryption Key
490
Response Notification Hash
495
Response Data Request
500
Response Data and
Security Verification Hash
515
Security Log Request
Security Log
520
535
Auction Results
150
Auction Server
160
Client Machine

FIG. 7E

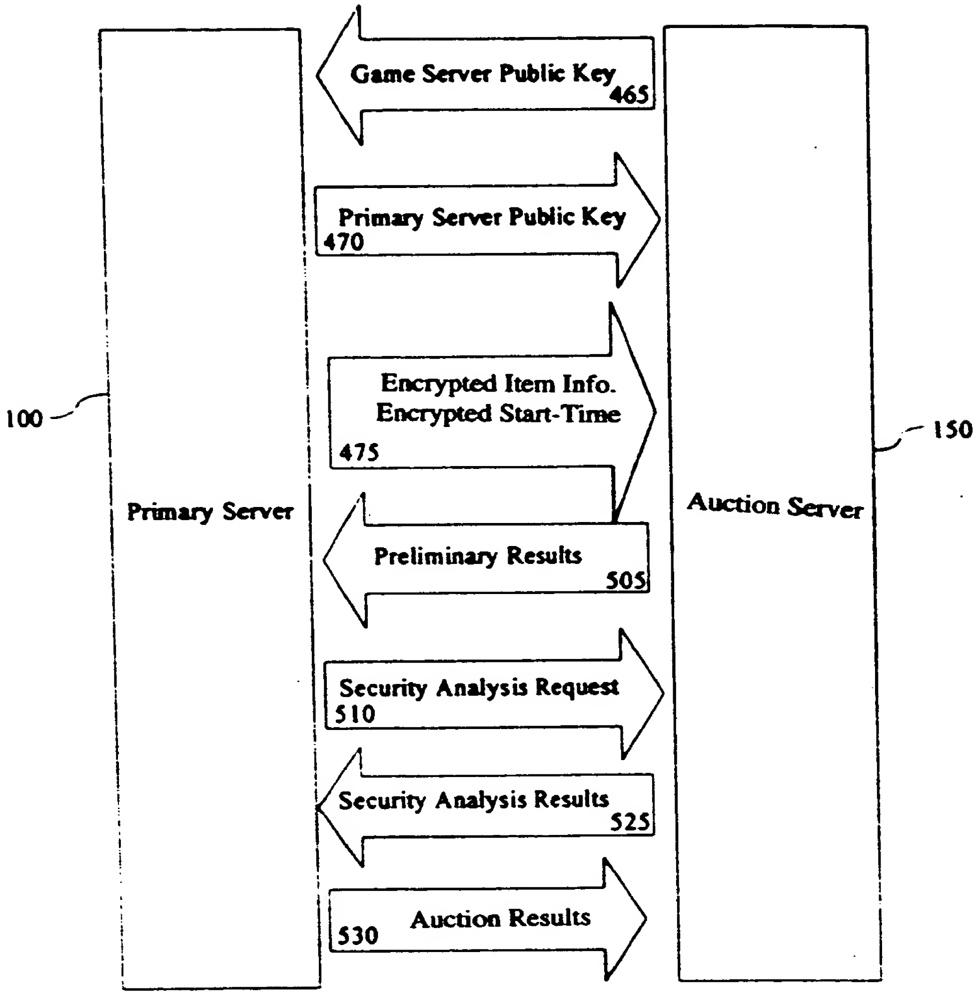

Game Server Public Key
465
Primary Server Public Key
470
Encrypted Item Info.
Encrypted Start-Time
475
100
Primary Server
150
Auction Server
Preliminary Results
505
Security Analysis Request
510
Security Analysis Results
525
Auction Results
530

FIG. 7F

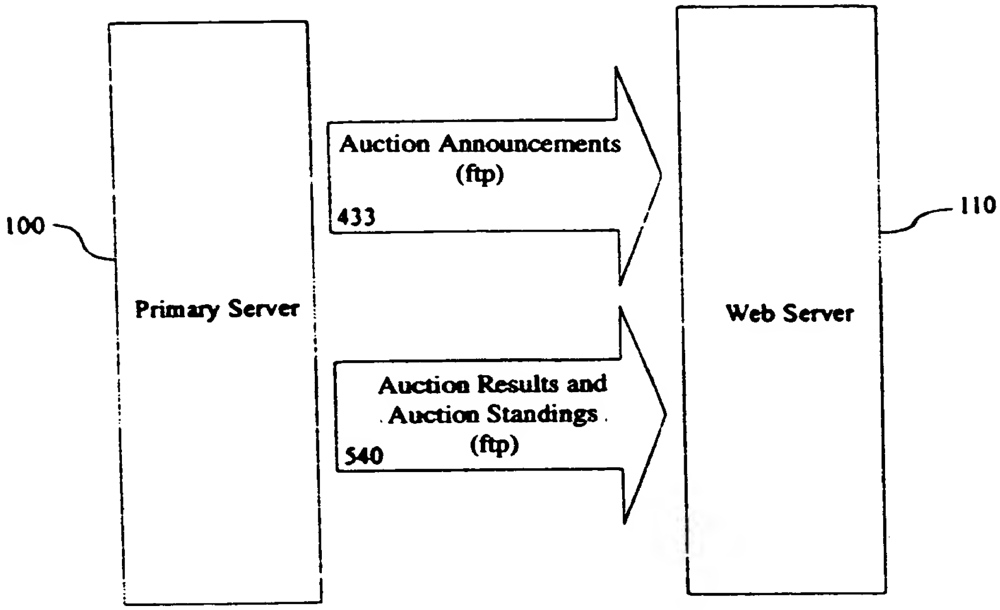

100
Primary Server
Auction Announcements
(ftp)
433
Auction Results and
Auction Standings
(ftp)
540
110
Web Server

FIG. 7G

LOGIN INFORMATION DATA FIELDS

USERNAME
PASSWORD
NAME
ADDRESS
EMAIL
CREDIT CARDS
CREDIT INFORMATION/RATING
UNIQUE IDENTIFICATION
NETWORK LATENCY HISTORY

F I G. 8A

BID HISTORY
AUCTION INFORMATION DATA FIELDS

ITEM NUMBER
DESCRIPTION
CATEGORY
MINIMUM SALE AMOUNT
BID INCREMENTS
START TIME
END TIME (IF APPLICABLE)
HIGHEST BID
ALL BID INFORMATION
OWNER
ADDRESS
EMAIL
PHONE
SALE HISTORY
BUYER COMMENTS

F I G. 8B

BID INFORMATION DATA FIELDS

USERNAME
UNIQUE IDENTIFICATION
SUBMISSION-TIME TIME STAMP
RECEIPT-TIME TIME STAMP
BID AMOUNT
VERIFICATION KEY

F I G. 8C

THE AUCTION PROCESS

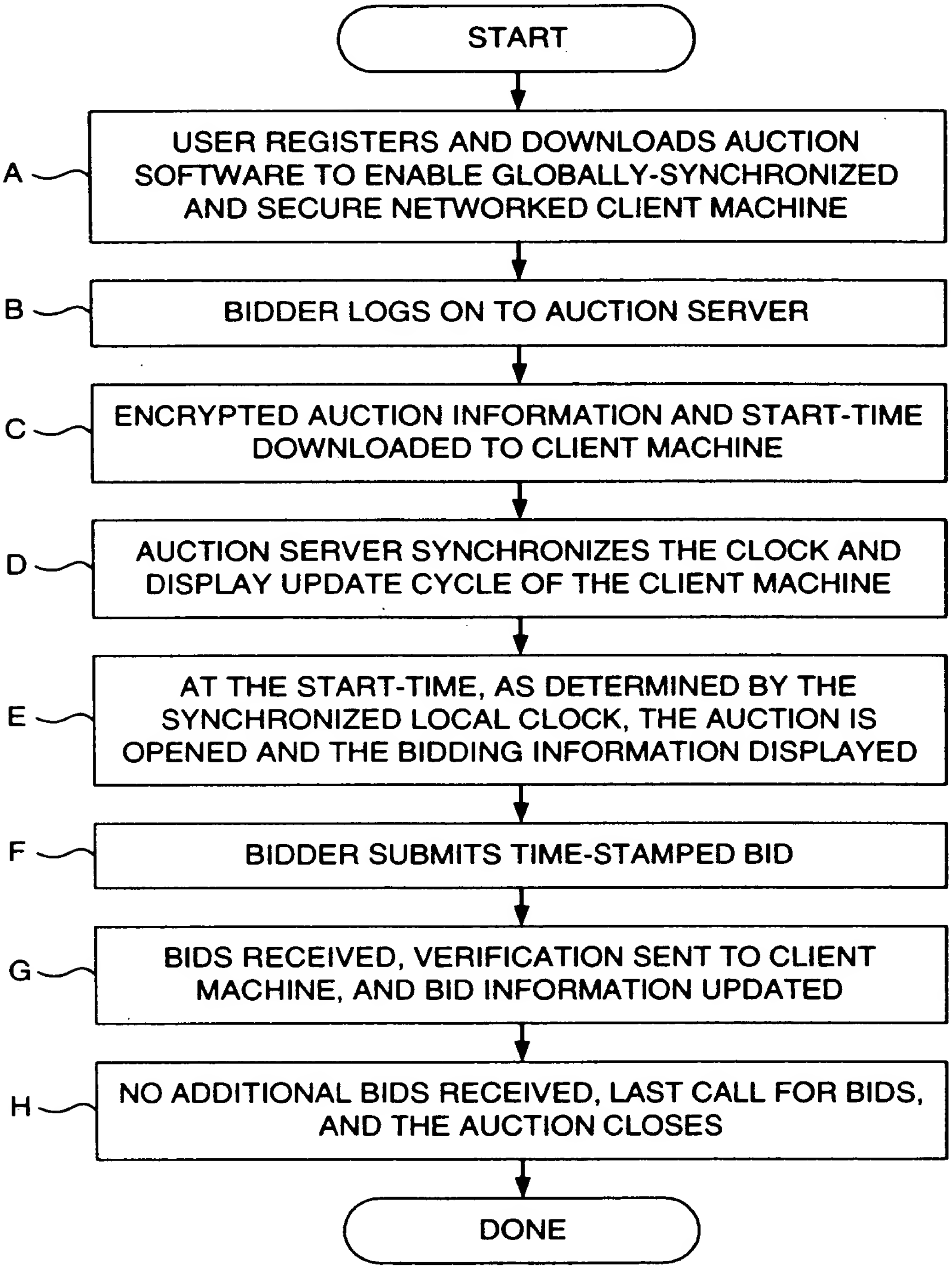


FIG. 9

USER REGISTERS AND DOWNLOADS AUCTION SOFTWARE

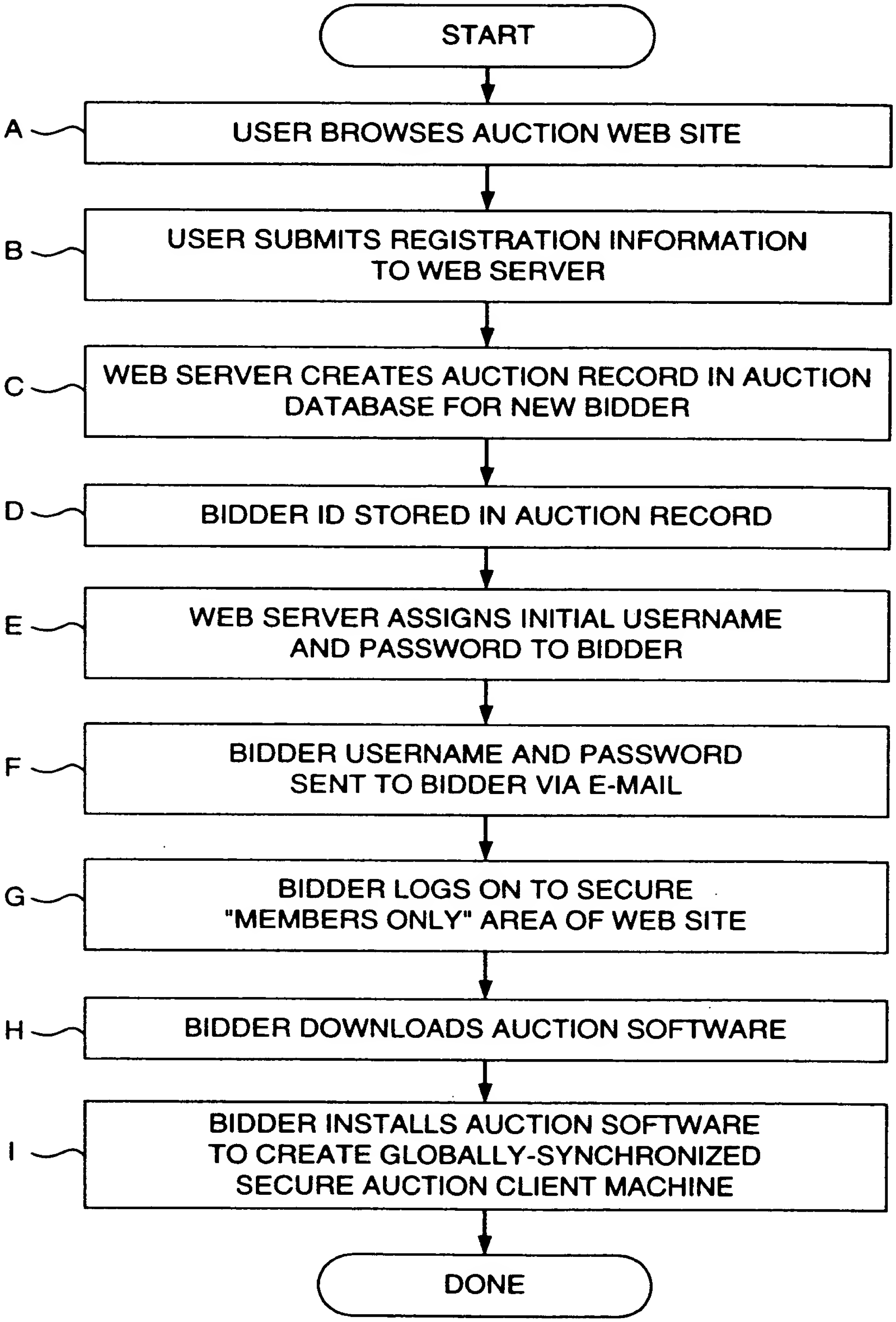


FIG. 9A

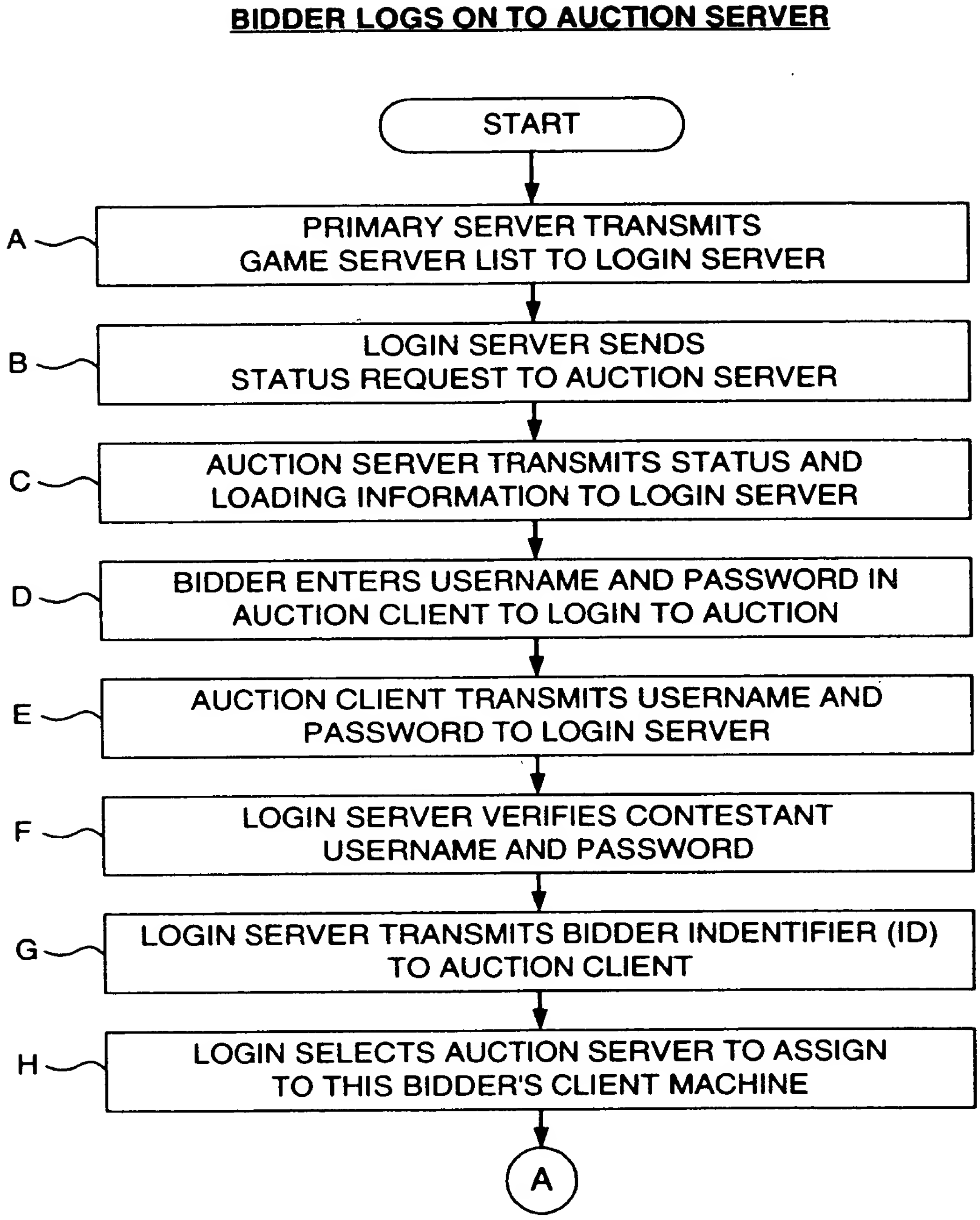
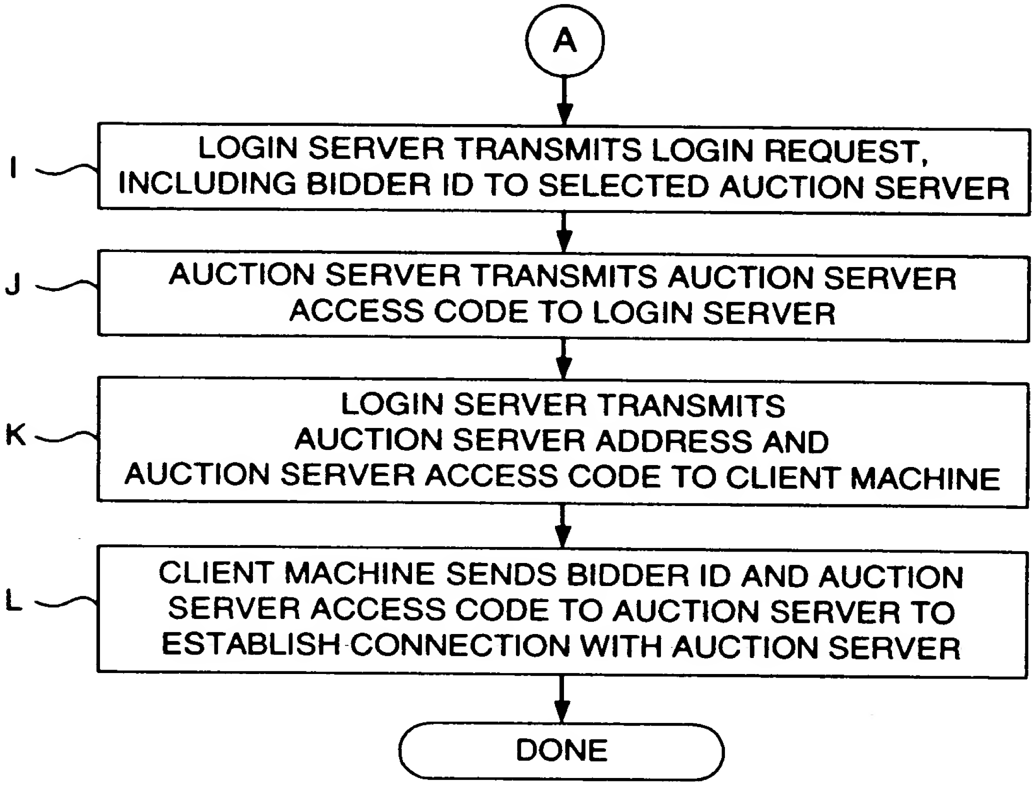
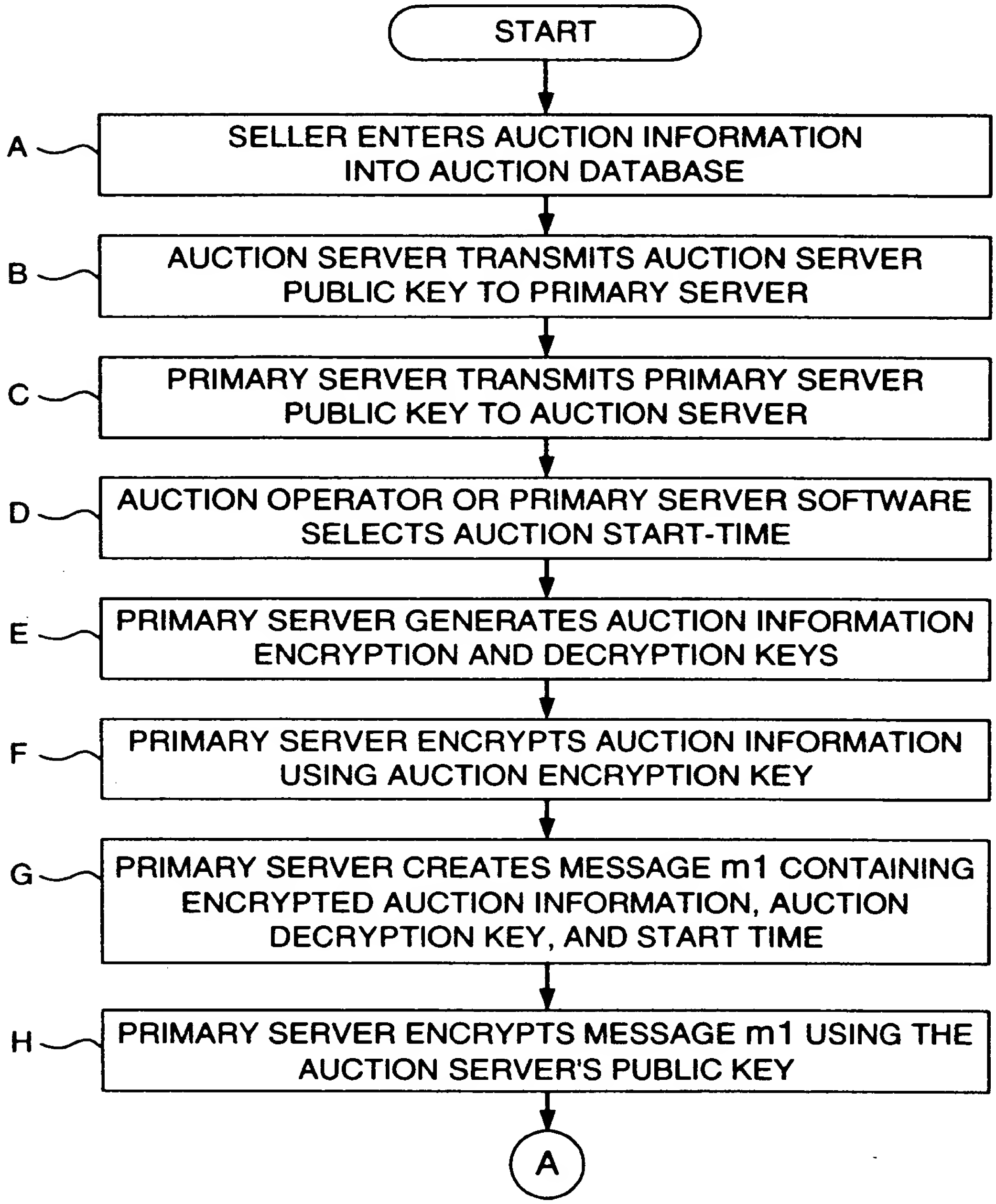

BIDDER LOGS ON TO AUCTION SERVER
START
A
PRIMARY SERVER TRANSMITS GAME SERVER LIST TO LOGIN SERVER
B
LOGIN SERVER SENDS STATUS REQUEST TO AUCTION SERVER
C
AUCTION SERVER TRANSMITS STATUS AND LOADING INFORMATION TO LOGIN SERVER
D
BIDDER ENTERS USERNAME AND PASSWORD IN AUCTION CLIENT TO LOGIN TO AUCTION
E
AUCTION CLIENT TRANSMITS USERNAME AND PASSWORD TO LOGIN SERVER
F
LOGIN SERVER VERIFIES CONTESTANT USERNAME AND PASSWORD
G
LOGIN SERVER TRANSMITS BIDDER INDENTIFIER (ID) TO AUCTION CLIENT
H
LOGIN SELECTS AUCTION SERVER TO ASSIGN TO THIS BIDDER'S CLIENT MACHINE
A

FIG. 9B1

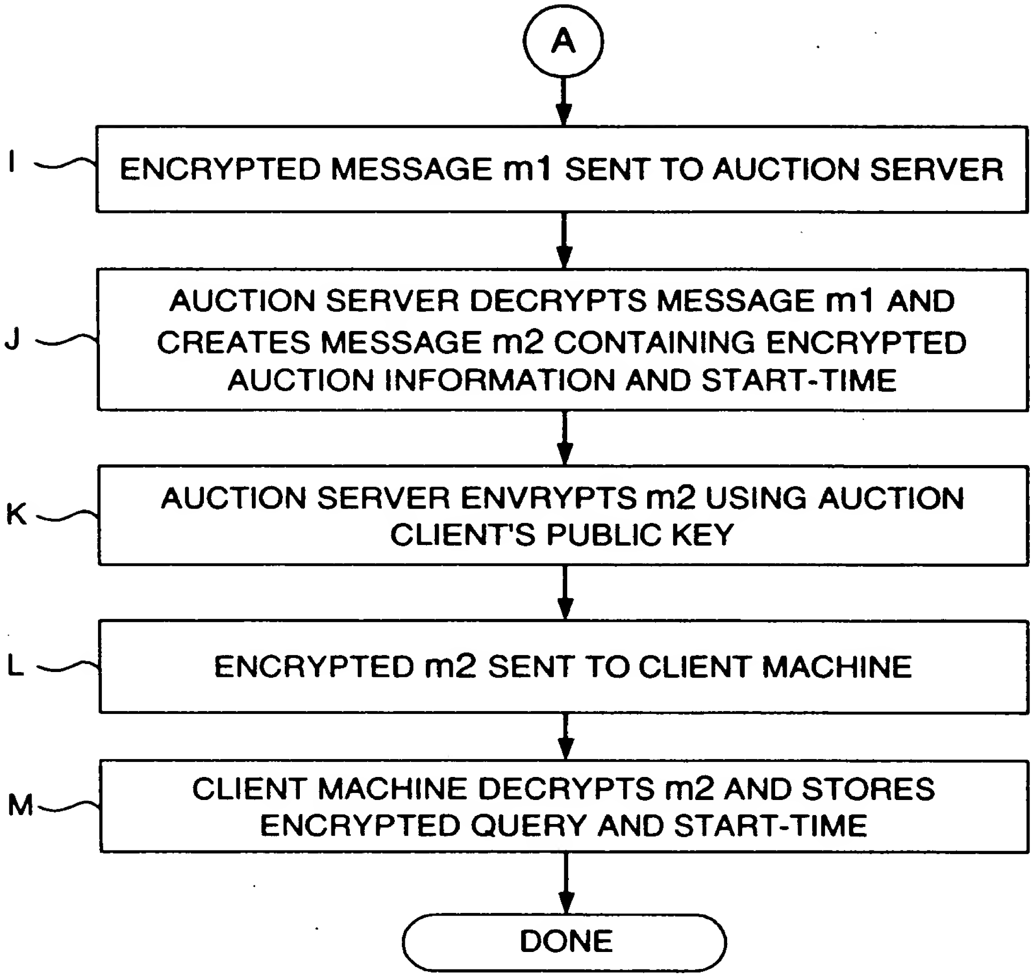

A
I
LOGIN SERVER TRANSMITS LOGIN REQUEST, INCLUDING BIDDER ID TO SELECTED AUCTION SERVER
J
AUCTION SERVER TRANSMITS AUCTION SERVER ACCESS CODE TO LOGIN SERVER
K
LOGIN SERVER TRANSMITS AUCTION SERVER ADDRESS AND AUCTION SERVER ACCESS CODE TO CLIENT MACHINE
L
CLIENT MACHINE SENDS BIDDER ID AND AUCTION SERVER ACCESS CODE TO AUCTION SERVER TO ESTABLISH CONNECTION WITH AUCTION SERVER
DONE

F I G. 9B2

ENCRYPTED AUCTION INFORMATION AND START-TIME DOWNLOADED TO CLIENT MACHINE



F I G. 9C1


A
I
ENCRYPTED MESSAGE m1 SENT TO AUCTION SERVER
J
AUCTION SERVER DECRYPTS MESSAGE m1 AND CREATES MESSAGE m2 CONTAINING ENCRYPTED AUCTION INFORMATION AND START-TIME
K
AUCTION SERVER ENVRYPTS m2 USING AUCTION CLIENT'S PUBLIC KEY
L
ENCRYPTED m2 SENT TO CLIENT MACHINE
M
CLIENT MACHINE DECRYPTS m2 AND STORES ENCRYPTED QUERY AND START-TIME
DONE

F I G. 9C2

AUCTION SERVER SYNCHRONIZES THE CLOCK AND DISPLAY UPDATE CYCLE OF THE CLIENT MACHINE

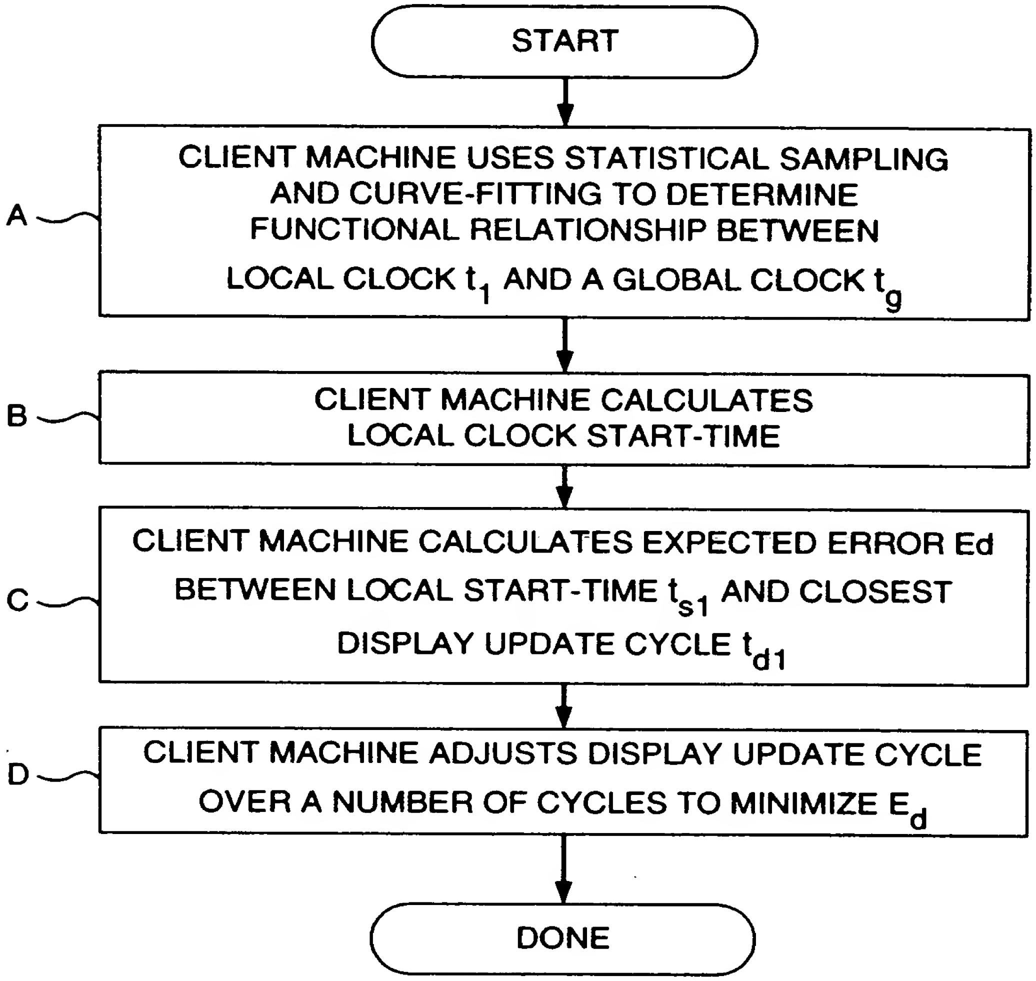
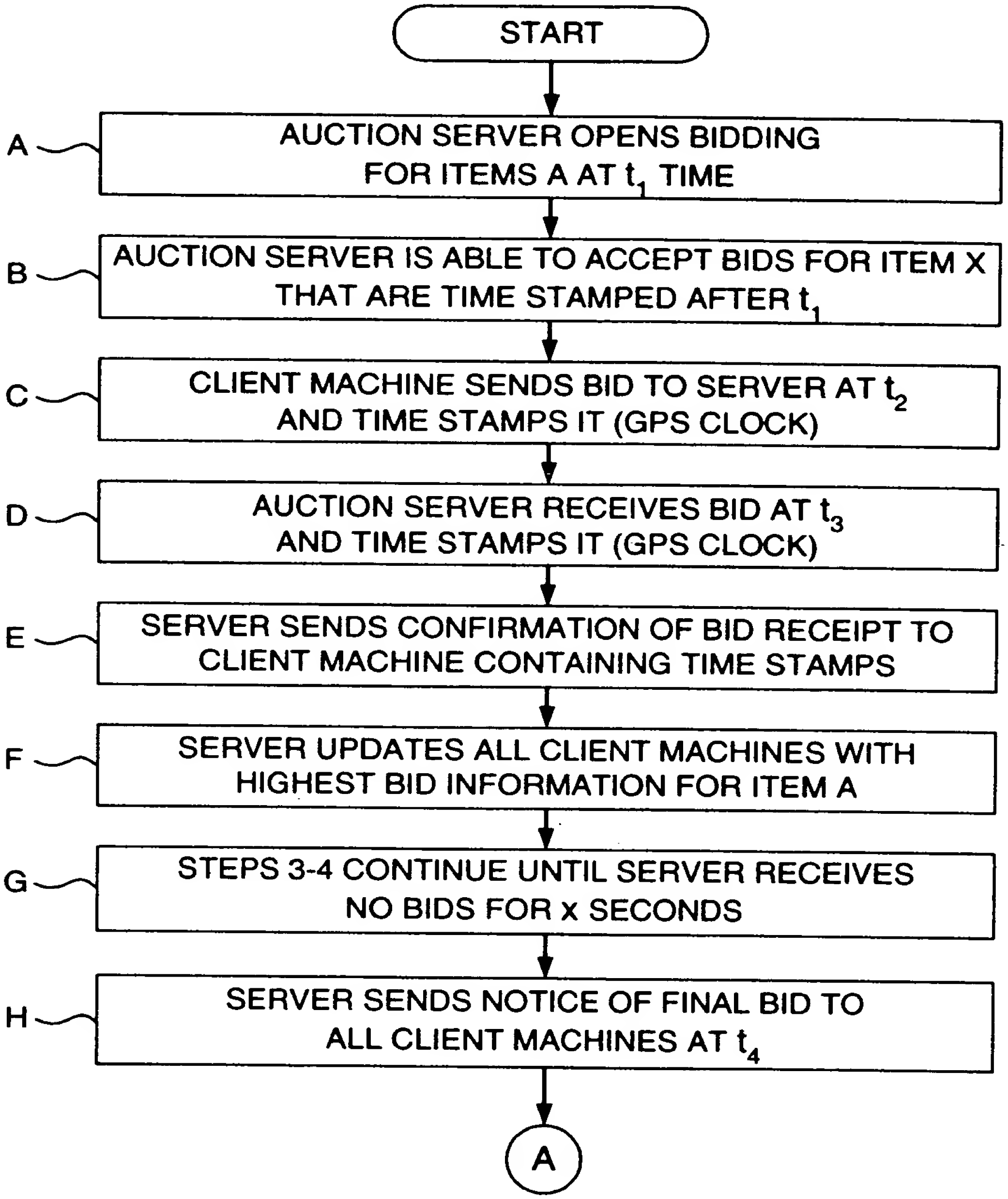


FIG. 9D

HIGH LEVEL BIDDING PROCESS



F I G. 9E1

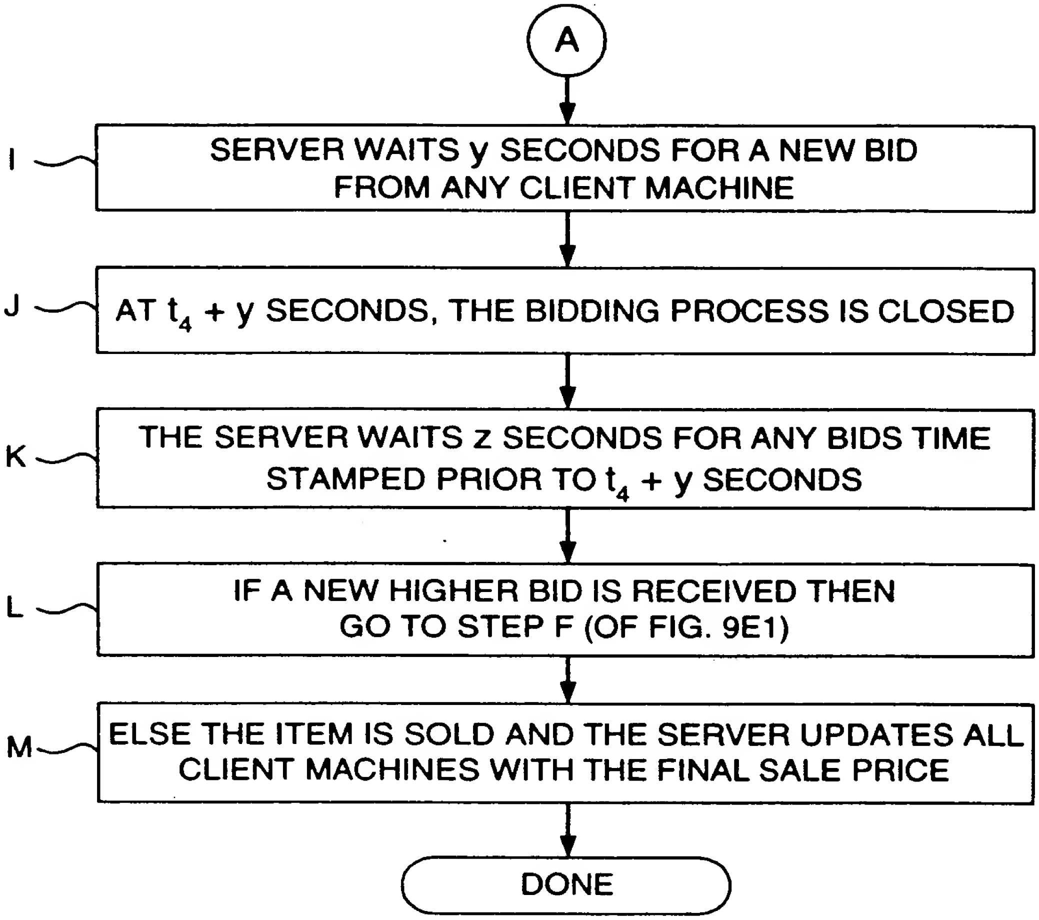
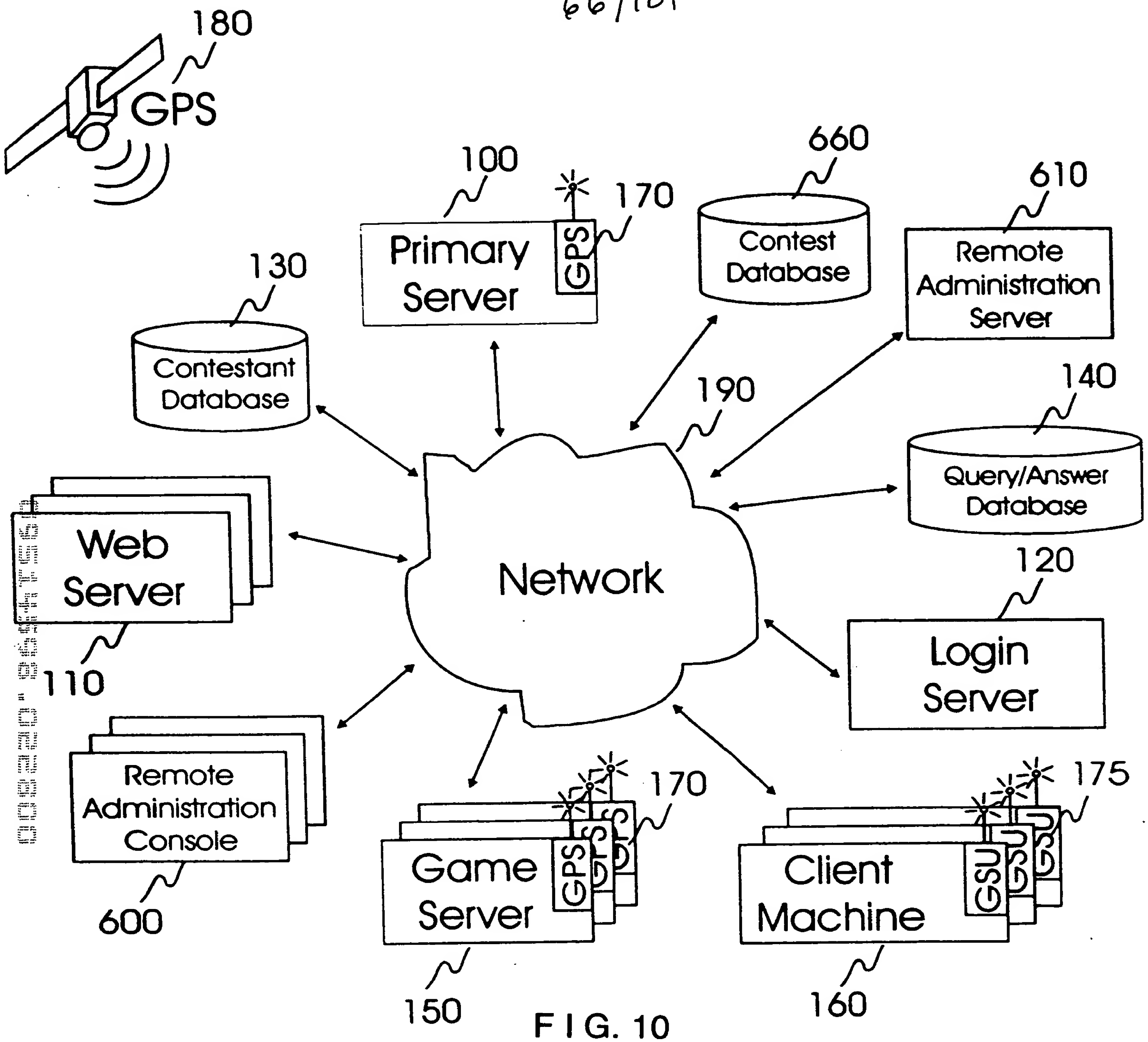
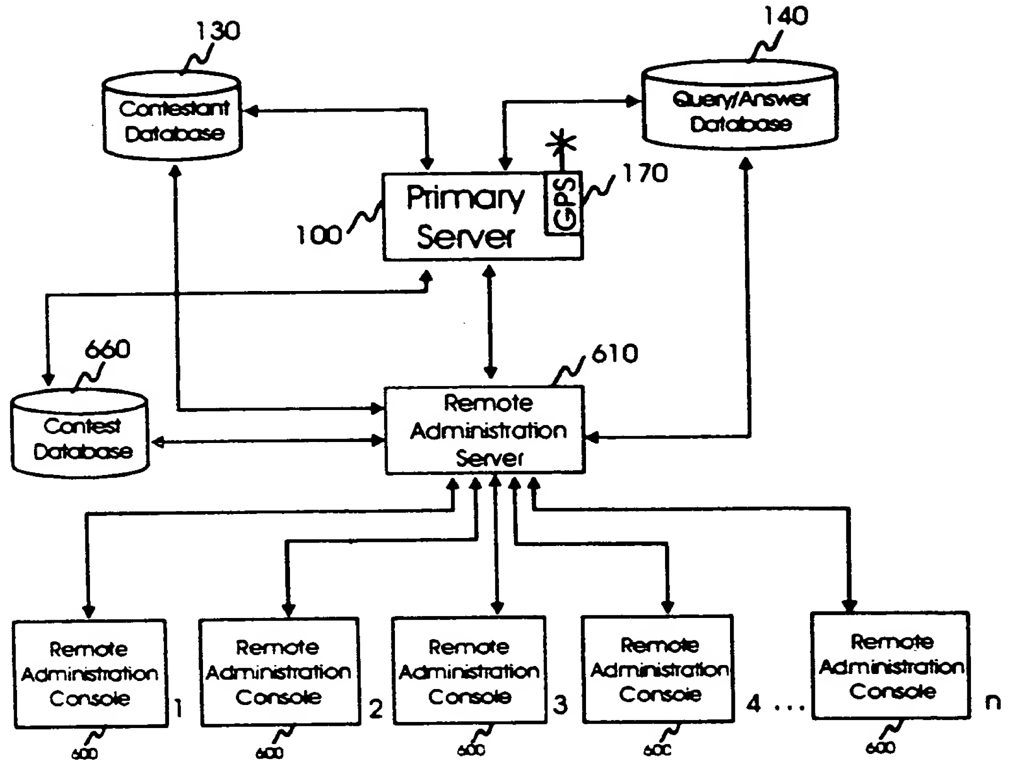

A
I
SERVER WAITS y SECONDS FOR A NEW BID FROM ANY CLIENT MACHINE
J
AT t_4 + y SECONDS, THE BIDDING PROCESS IS CLOSED
K
THE SERVER WAITS z SECONDS FOR ANY BIDS TIME STAMPED PRIOR TO t_4 + y SECONDS
L
IF A NEW HIGHER BID IS RECEIVED THEN GO TO STEP F (OF FIG. 9E1)
M
ELSE THE ITEM IS SOLD AND THE SERVER UPDATES ALL CLIENT MACHINES WITH THE FINAL SALE PRICE
DONE

FIG. 9E2

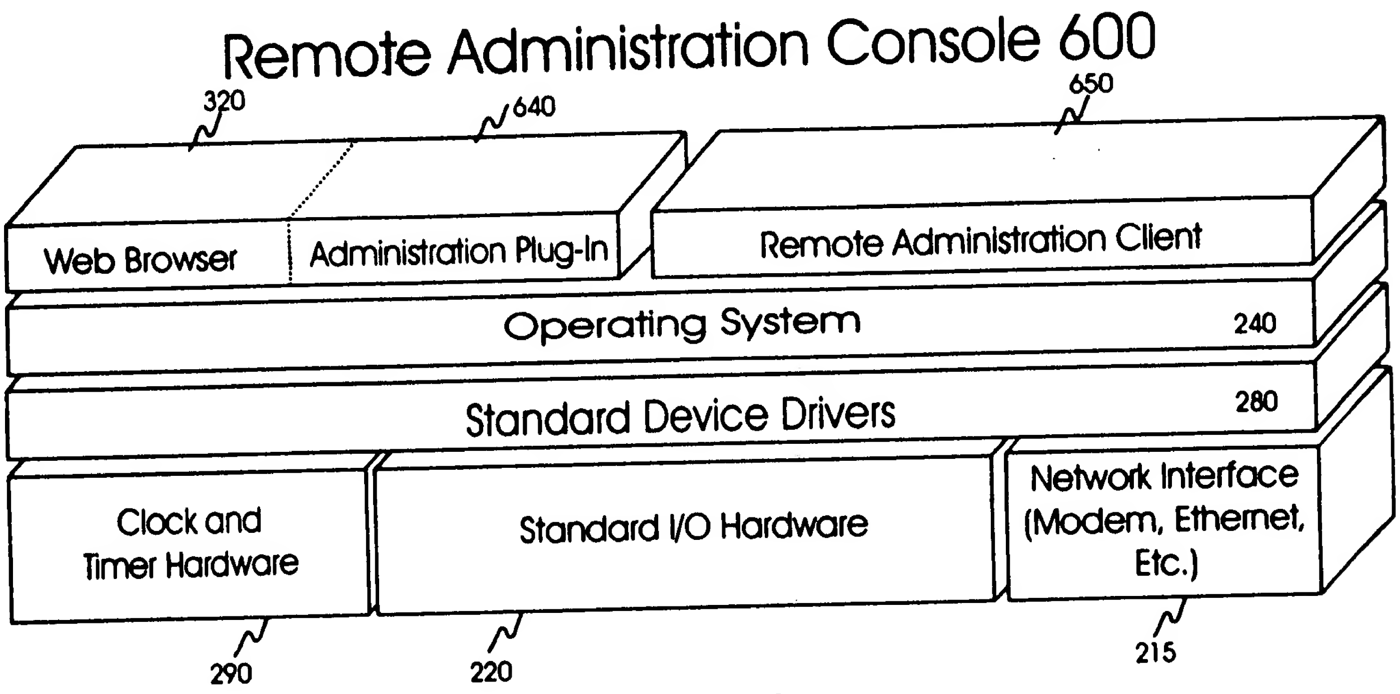
66/101


180
GPS
100
Primary Server
GPS
170
660
Contest Database
610
Remote Administration Server
130
Contestant Database
190
140
Query/Answer Database
Web Server
110
Network
120
Login Server
Remote Administration Console
600
Game Server
GPS
170
150
Client Machine
GSU
175
160

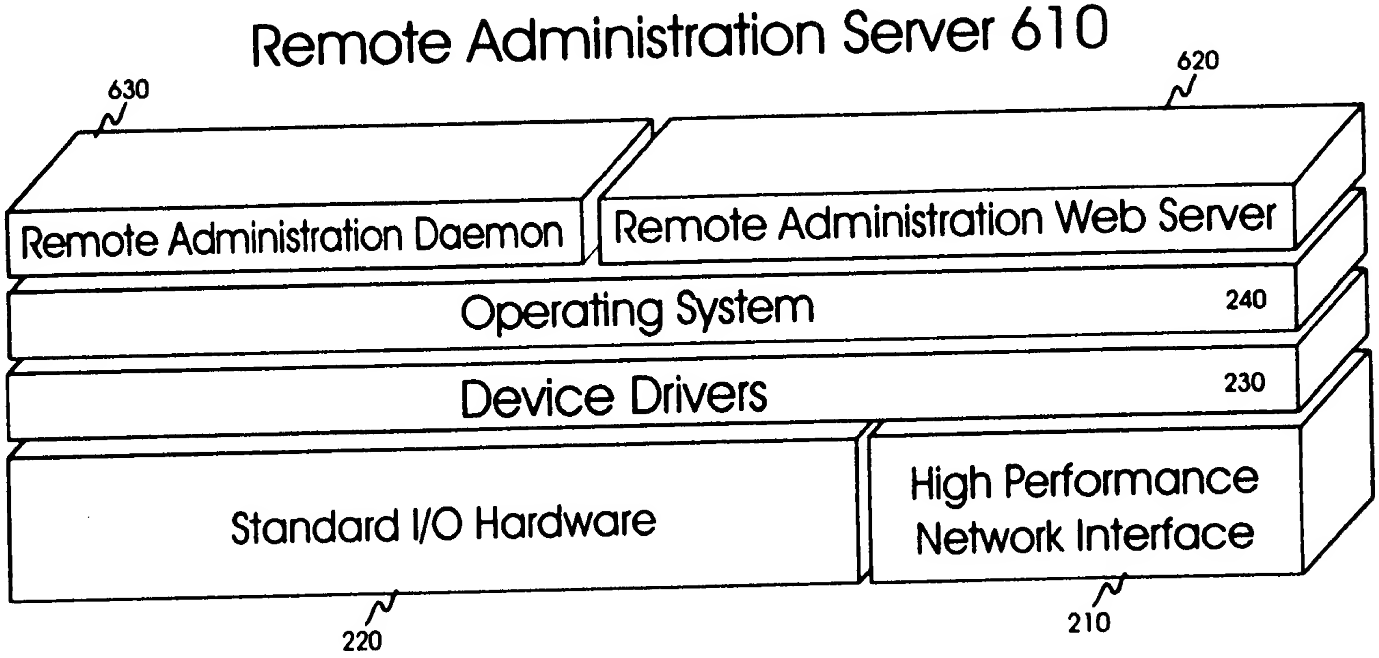
F I G. 10


130
Contestant Database
140
Query/Answer Database
Primary Server
GPS
170
100
660
Contest Database
610
Remote Administration Server
Remote Administration Console
1
600
Remote Administration Console
2
600
Remote Administration Console
3
600
Remote Administration Console
4 . . .
600
Remote Administration Console
n
600

F I G. 10A


Remote Administration Console 600
320
640
650
Web Browser
Administration Plug-In
Remote Administration Client
Operating System
240
Standard Device Drivers
280
Clock and Timer Hardware
Standard I/O Hardware
Network Interface (Modem, Ethernet, Etc.)
290
220
215

F I G. 10B


Remote Administration Server 610
630
620
Remote Administration Daemon
Remote Administration Web Server
Operating System
240
Device Drivers
230
Standard I/O Hardware
High Performance Network Interface
220
210

F I G. 10C

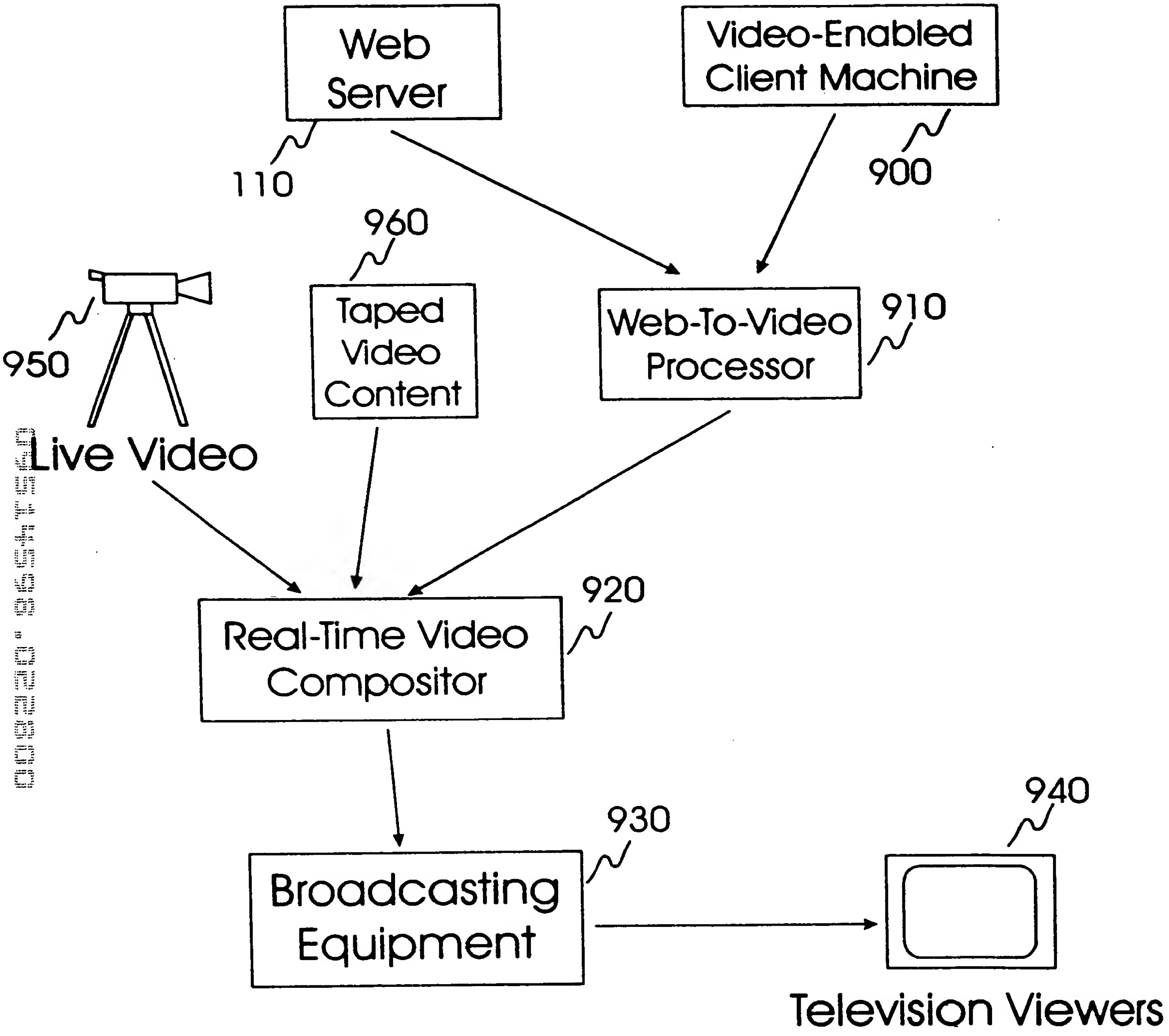
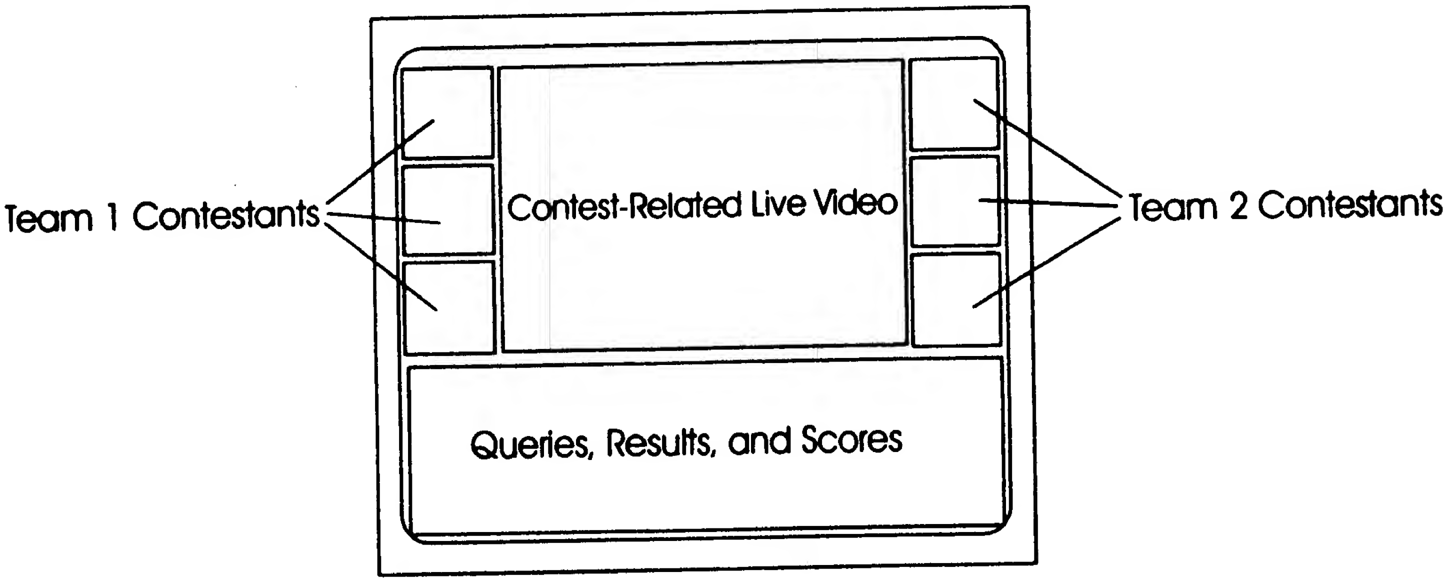

Web Server
110
Video-Enabled Client Machine
900
960
Taped Video Content
Web-To-Video Processor
910
950
Live Video
920
Real-Time Video Compositor
930
Broadcasting Equipment
940
Television Viewers

FIG. 11


Team 1 Contestants
Contest-Related Live Video
Team 2 Contestants
Queries, Results, and Scores

F I G. 11A

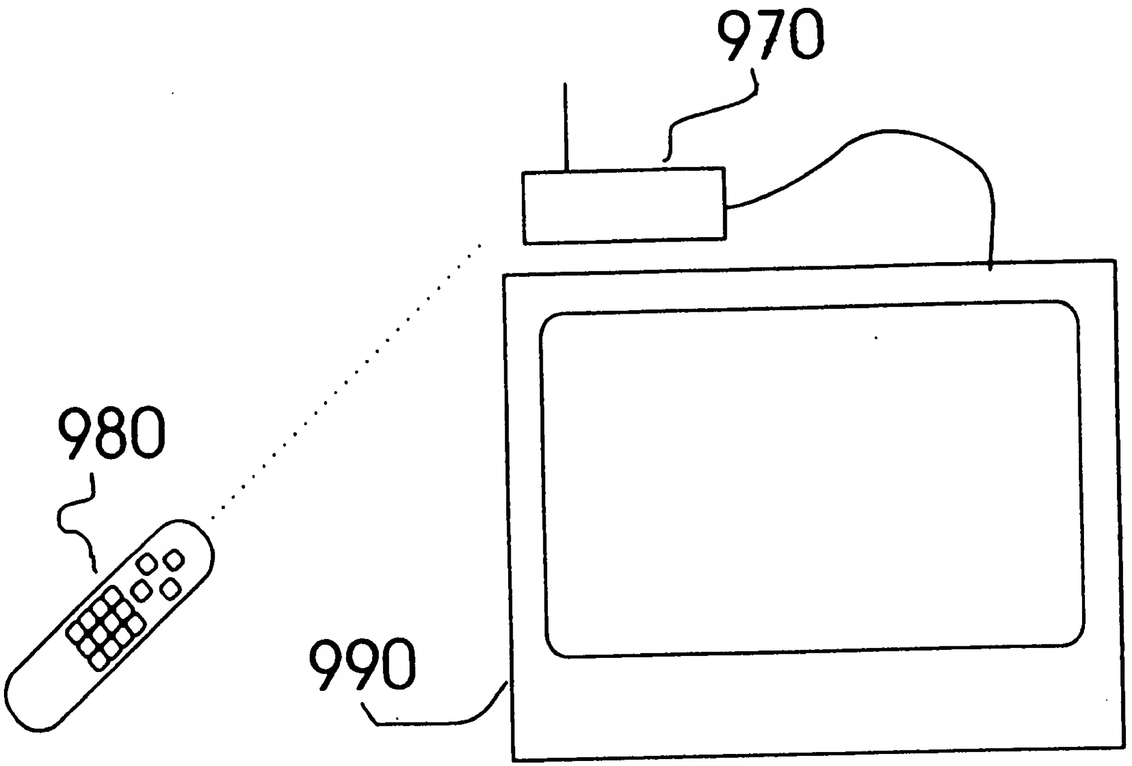
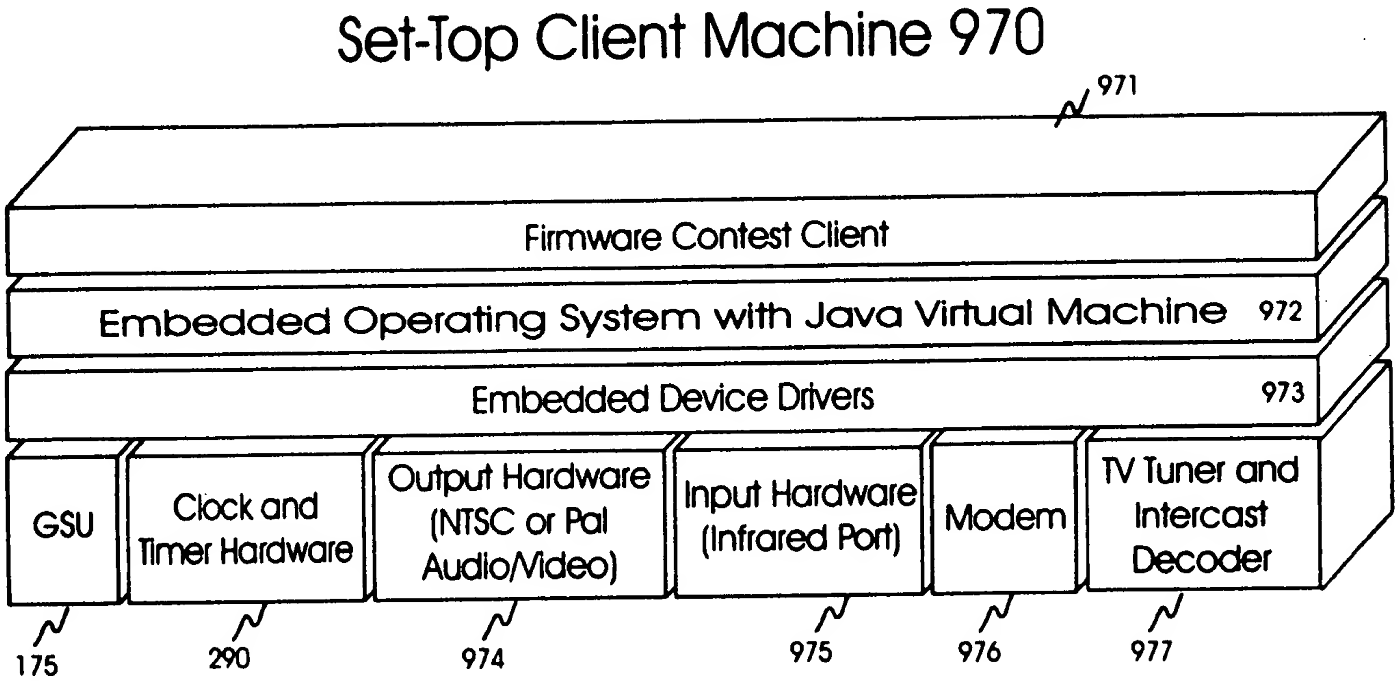


FIG. 12


Set-Top Client Machine 970
971
Firmware Contest Client
Embedded Operating System with Java Virtual Machine
972
Embedded Device Drivers
973
GSU
Clock and Timer Hardware
Output Hardware (NTSC or Pal Audio/Video)
Input Hardware (Infrared Port)
Modem
TV Tuner and Intercast Decoder
175
290
974
975
976
977

F I G. 12A

Examples of GSU Inputs for Time and Space Stamping

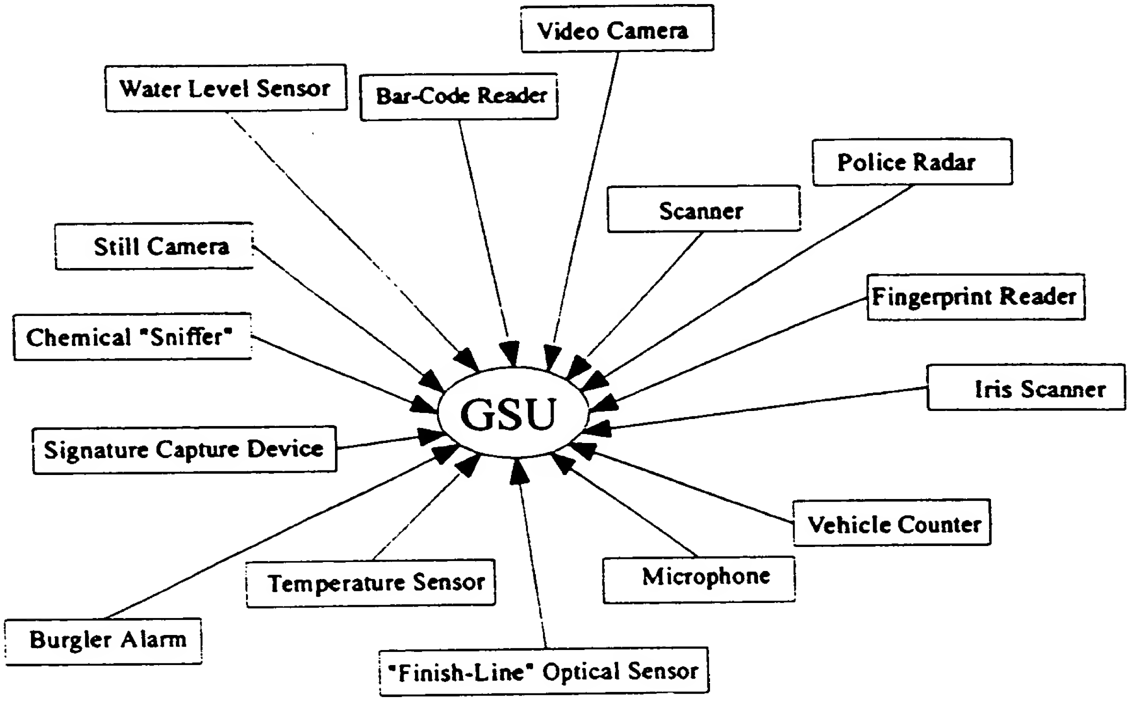
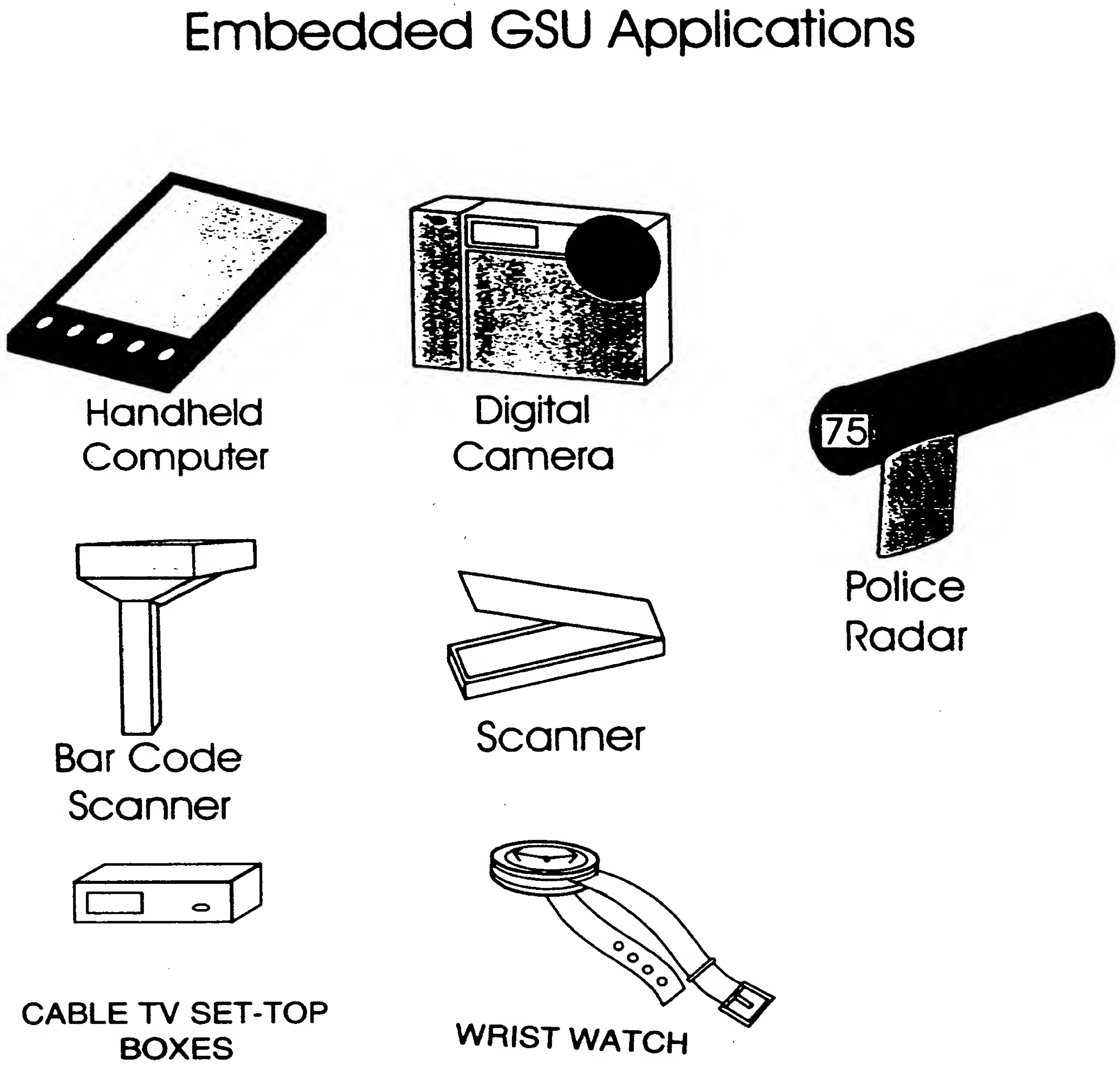
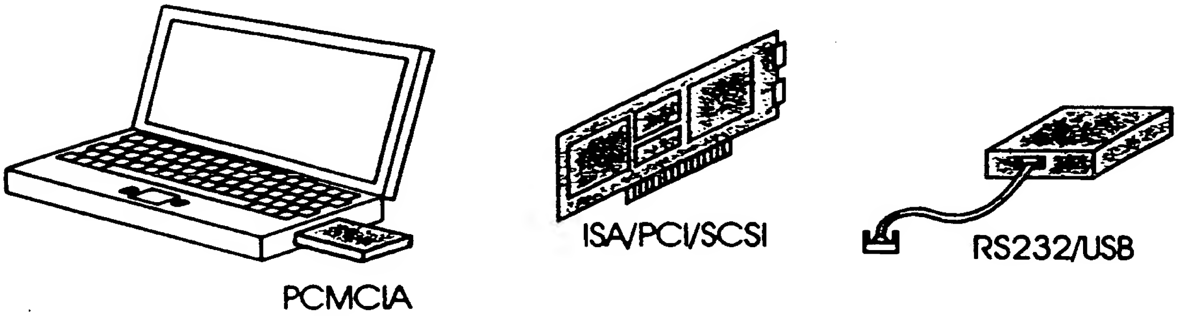


FIG. 13

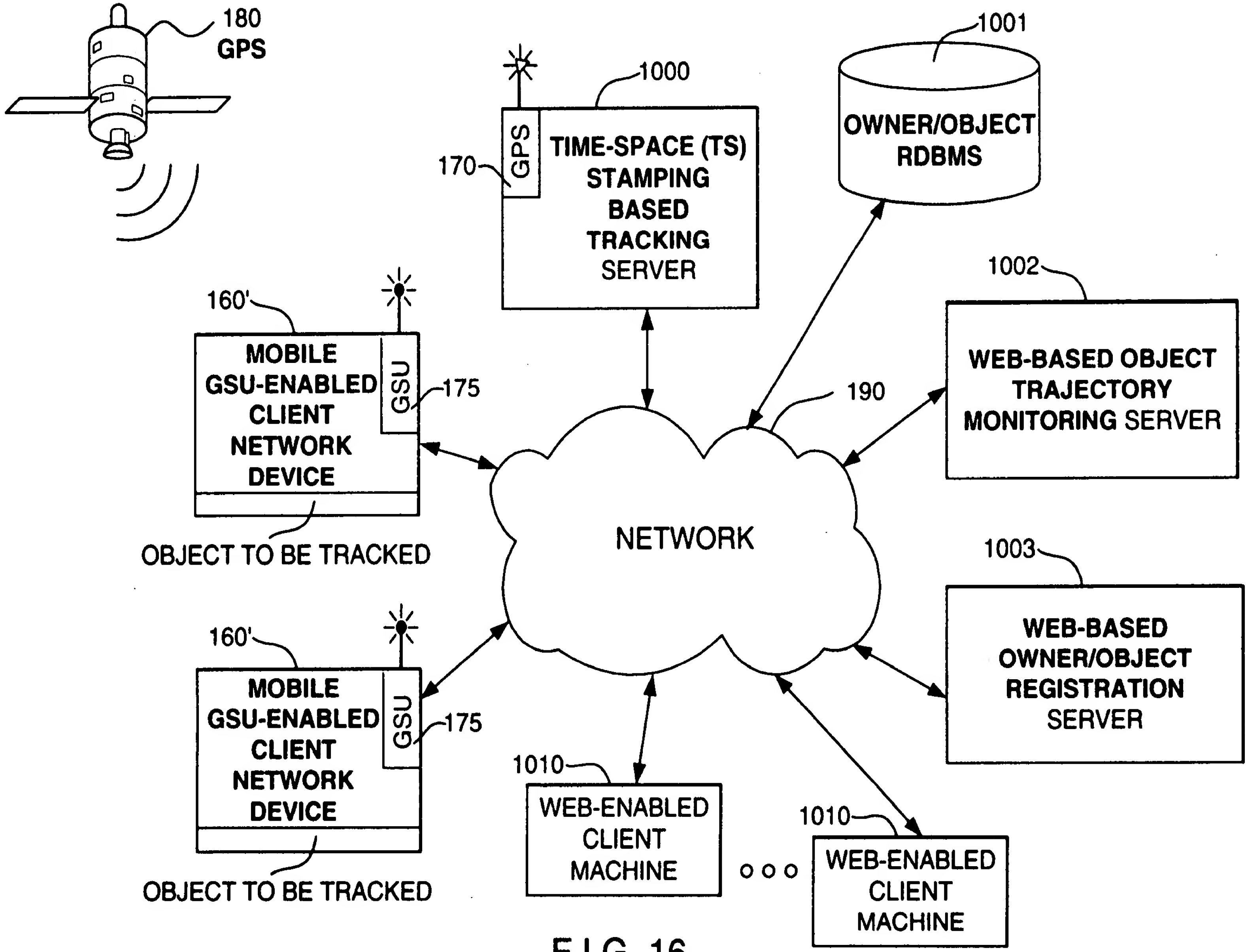

Embedded GSU Applications
Handheld Computer
Digital Camera
75
Police Radar
Bar Code Scanner
Scanner
CABLE TV SET-TOP BOXES
WRIST WATCH

F I G. 14

Peripheral GSU Configurations

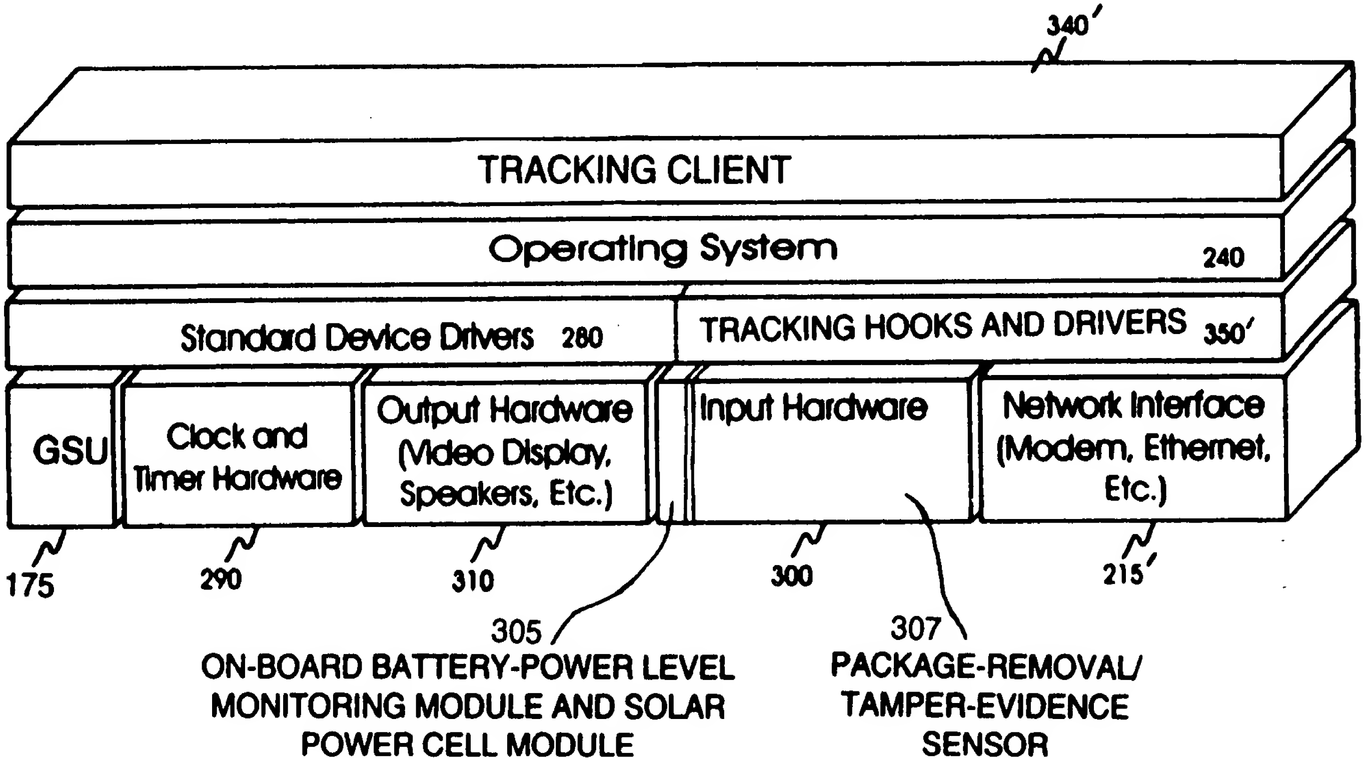


F I G. 15


180
GPS
1000
TIME-SPACE (TS) STAMPING BASED TRACKING SERVER
GPS
170
1001
OWNER/OBJECT RDBMS
1002
WEB-BASED OBJECT TRAJECTORY MONITORING SERVER
190
NETWORK
1003
WEB-BASED OWNER/OBJECT REGISTRATION SERVER
160'
MOBILE GSU-ENABLED CLIENT NETWORK DEVICE
GSU
175
OBJECT TO BE TRACKED
160'
MOBILE GSU-ENABLED CLIENT NETWORK DEVICE
GSU
175
OBJECT TO BE TRACKED
1010
WEB-ENABLED CLIENT MACHINE
1010
WEB-ENABLED CLIENT MACHINE

F I G. 16

GSU-ENABLED CLIENT NETWORK DEVICE 160'



F I G. 16A

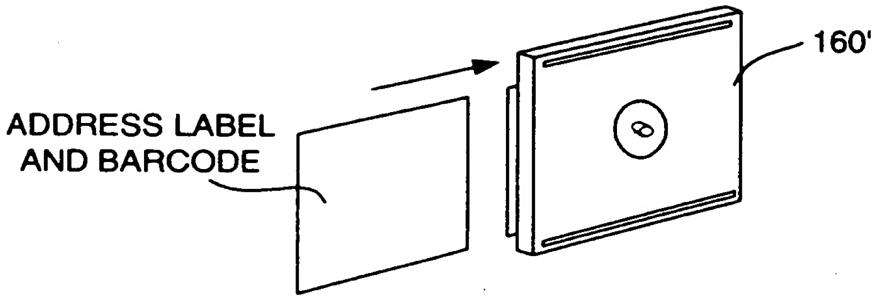


FIG. 16A1

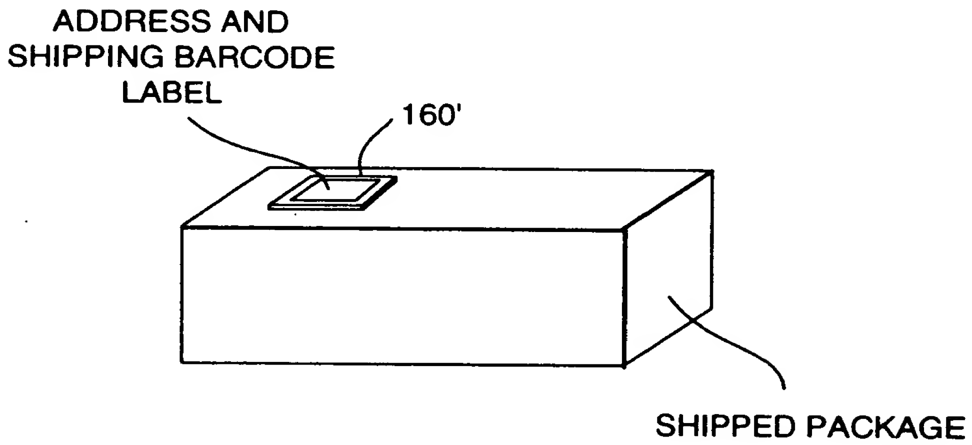
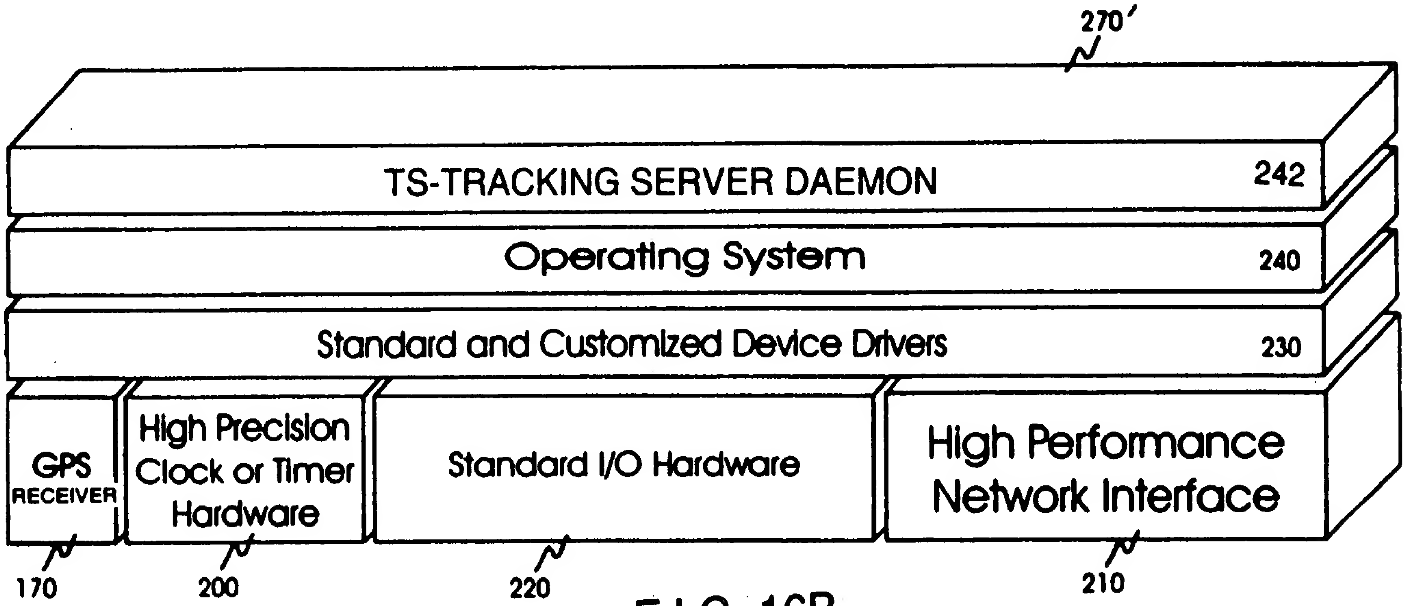


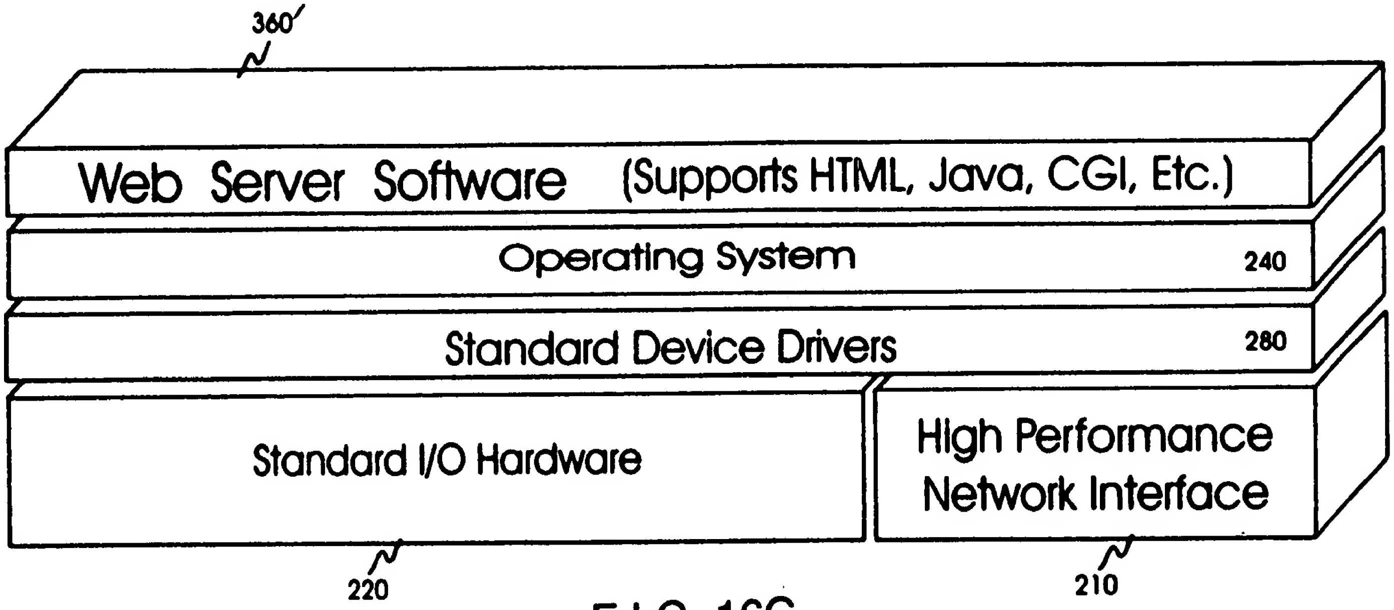
FIG. 16A2

TS-STAMPING BASED TRACKING SERVER 1000



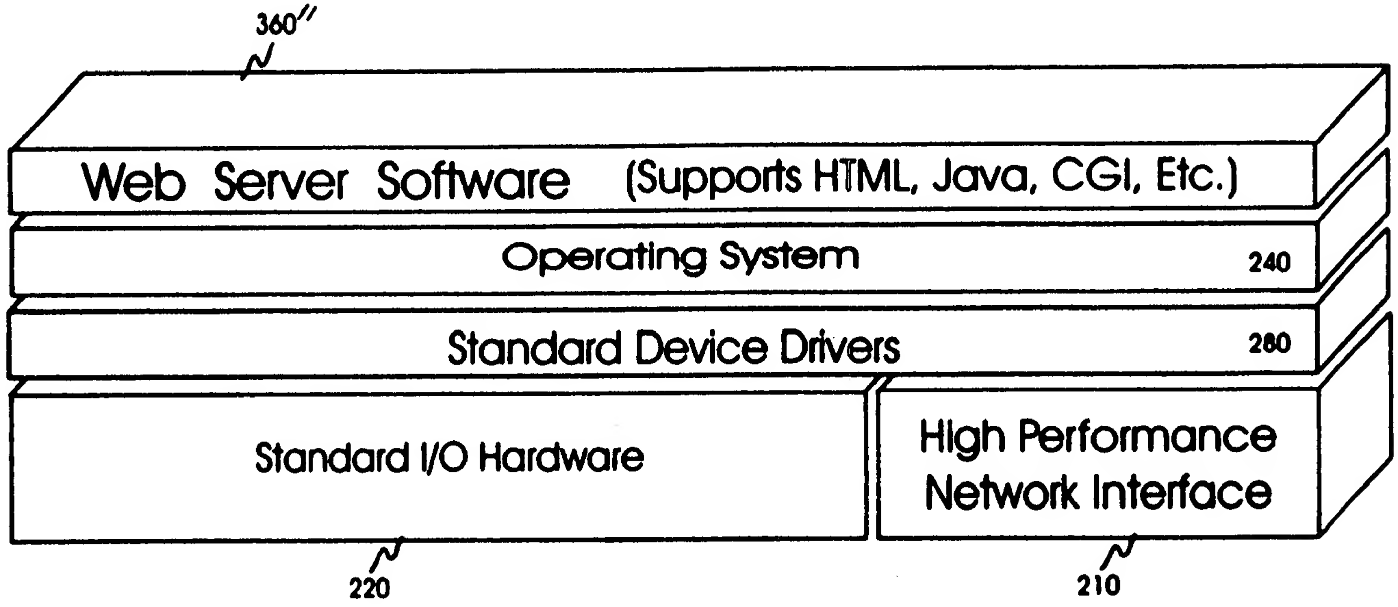
F I G. 16B

WEB-BASED OWNER/OBJECT REGISTRATION SERVER 1003



F I G. 16C

WEB-BASED OBJECT TRAJECTORY MONITORING SERVER 1002



F I G. 16D

TIME-SPACE (T,S) COORDINATE TRACKING OF MOBILE OBJECTS

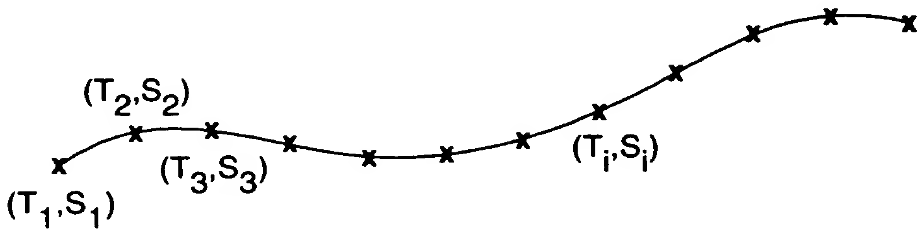


FIG. 17A

TIME-SPACE (T,S) STAMPING OF STATIONARY OBJECTS TO DETECT MOVEMENT THEREOF

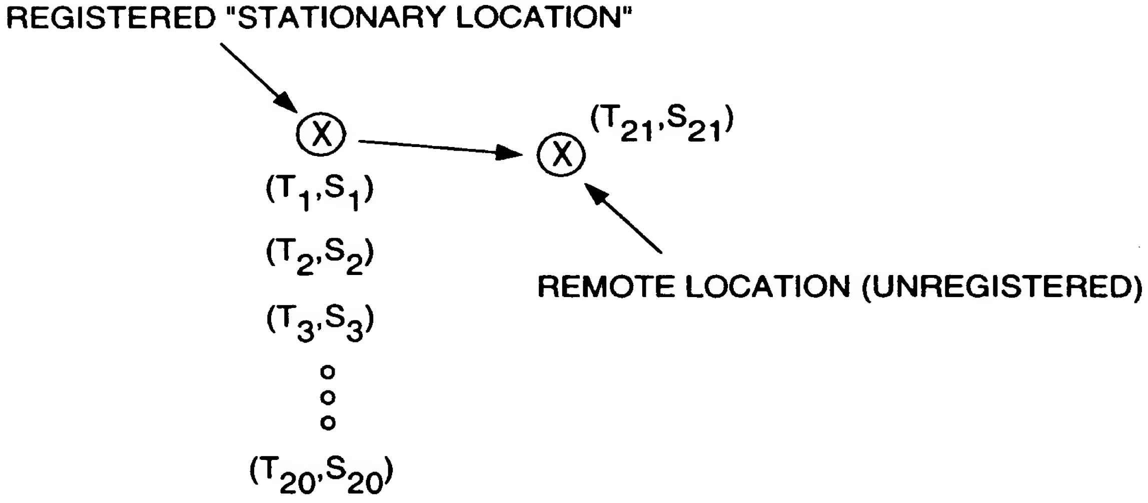
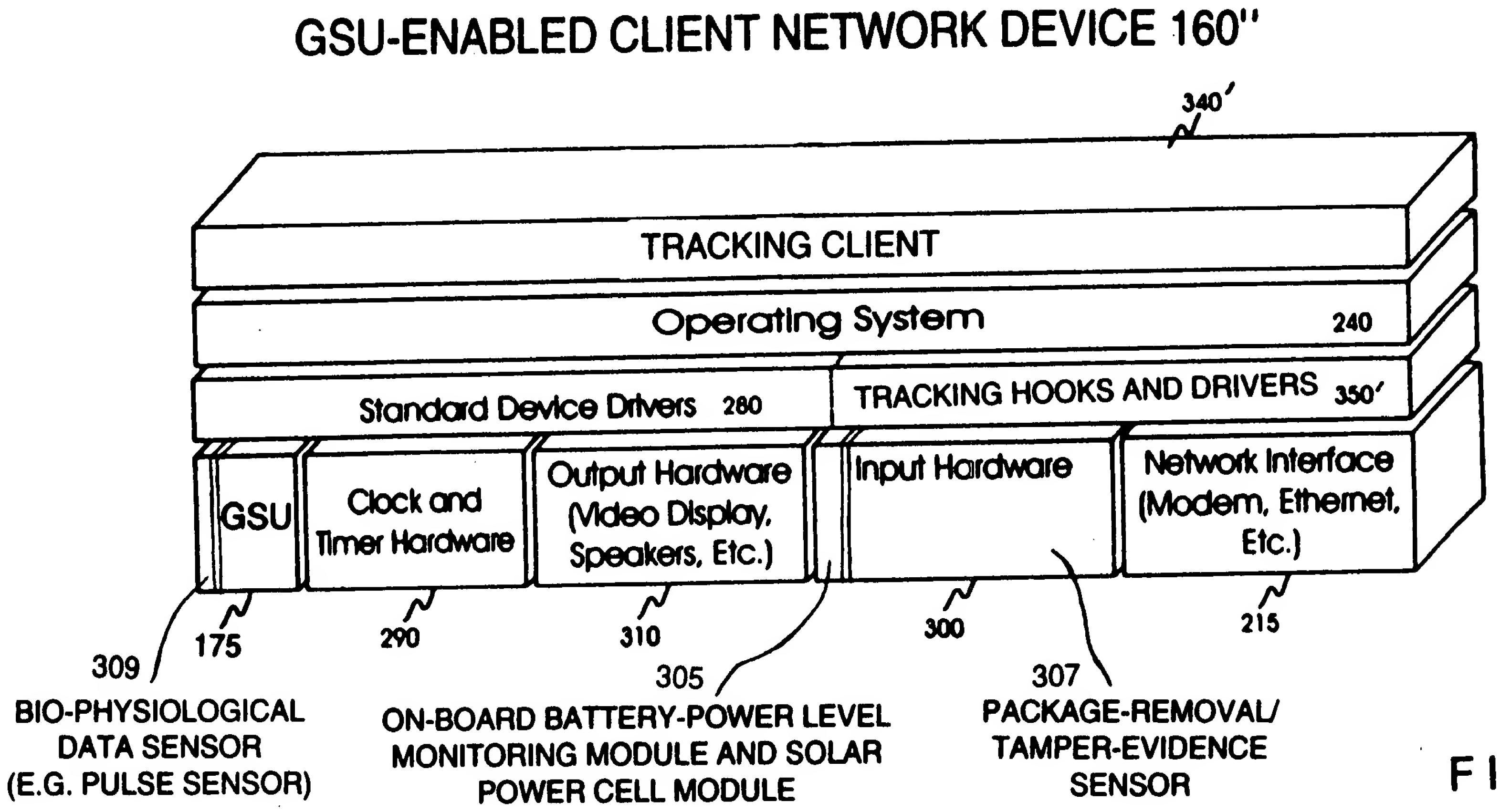


FIG. 17B

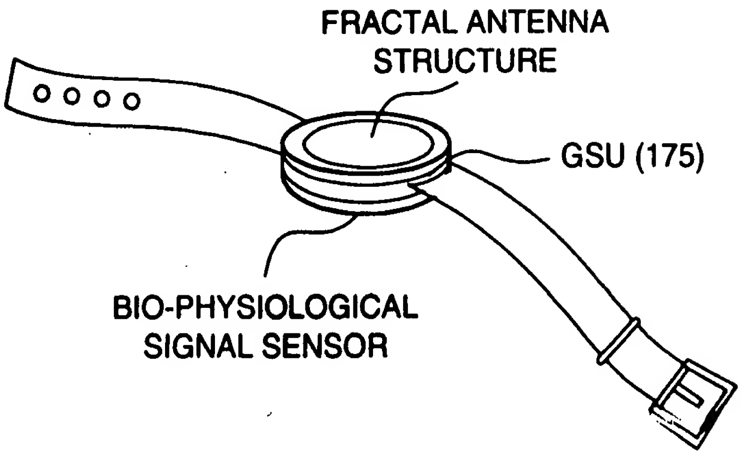
OWNER/OBJECT DATABASE TABLE

OBJECT NAME	OBJECT OWNER	GSU'S UNIQUE ID CODE (UIC)	TIME-SPACE STAMP		TIME-SPACE STAMP
TOM SMITH	TOM SMITH	1567N2B0	(T_1,S_1)		(T_i,S_i)
JERRY DOG	TOM SMITH	1568N2B0	(T_1,S_1)		(T_i,S_i)
VOLVO S80	TOM SMITH	1569N2B0	(T_1,S_1)		(T_i,S_i)
○ ○ ○	○ ○ ○	○ ○ ○	○ ○ ○	○○○	○ ○ ○

FIG. 18

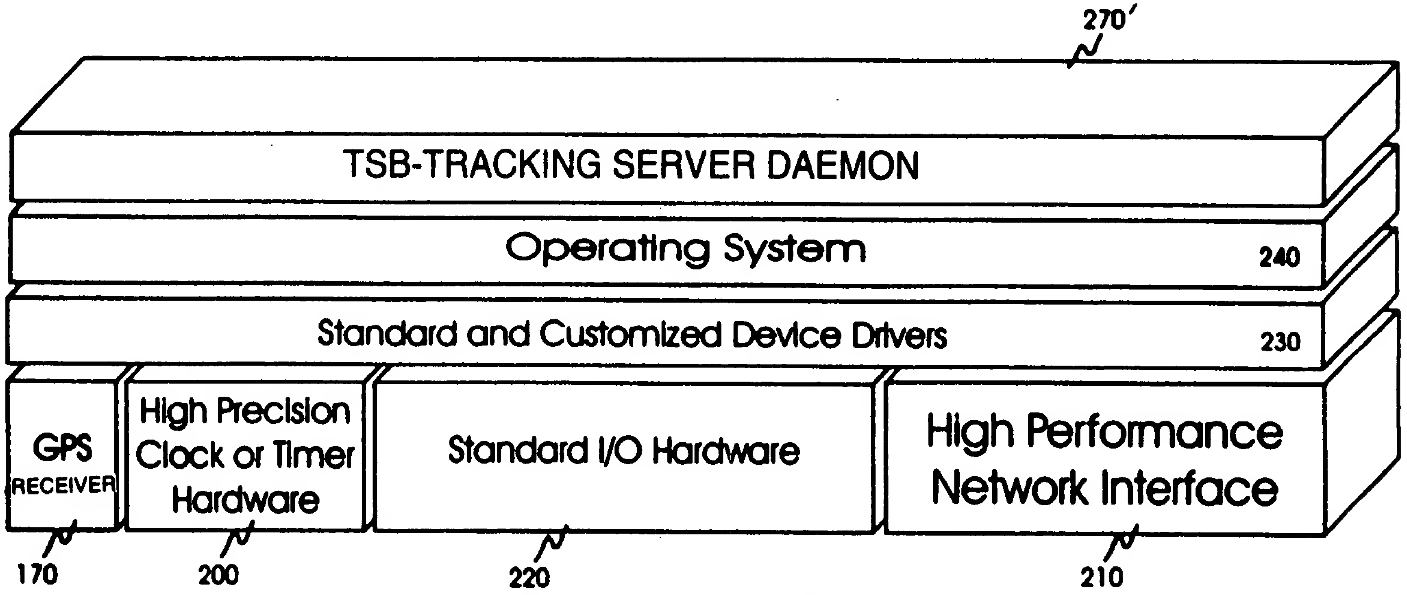


F I G. 19A



F I G. 19B

TIME-SPACE BIOPHYSIOLOGICAL (TSB)
STAMPING BASED TRACKING SERVER 1007



F I G. 20

(T,S,B) COORDINATE TRACKING OF MOBILE OBJECTS

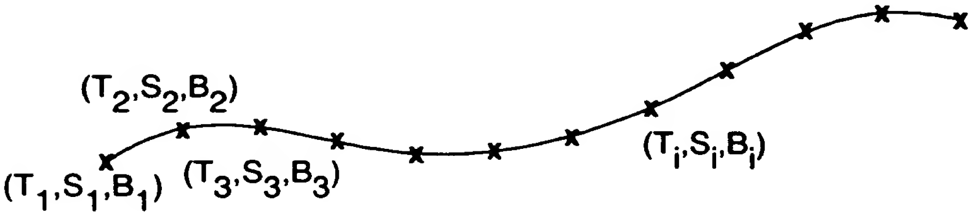
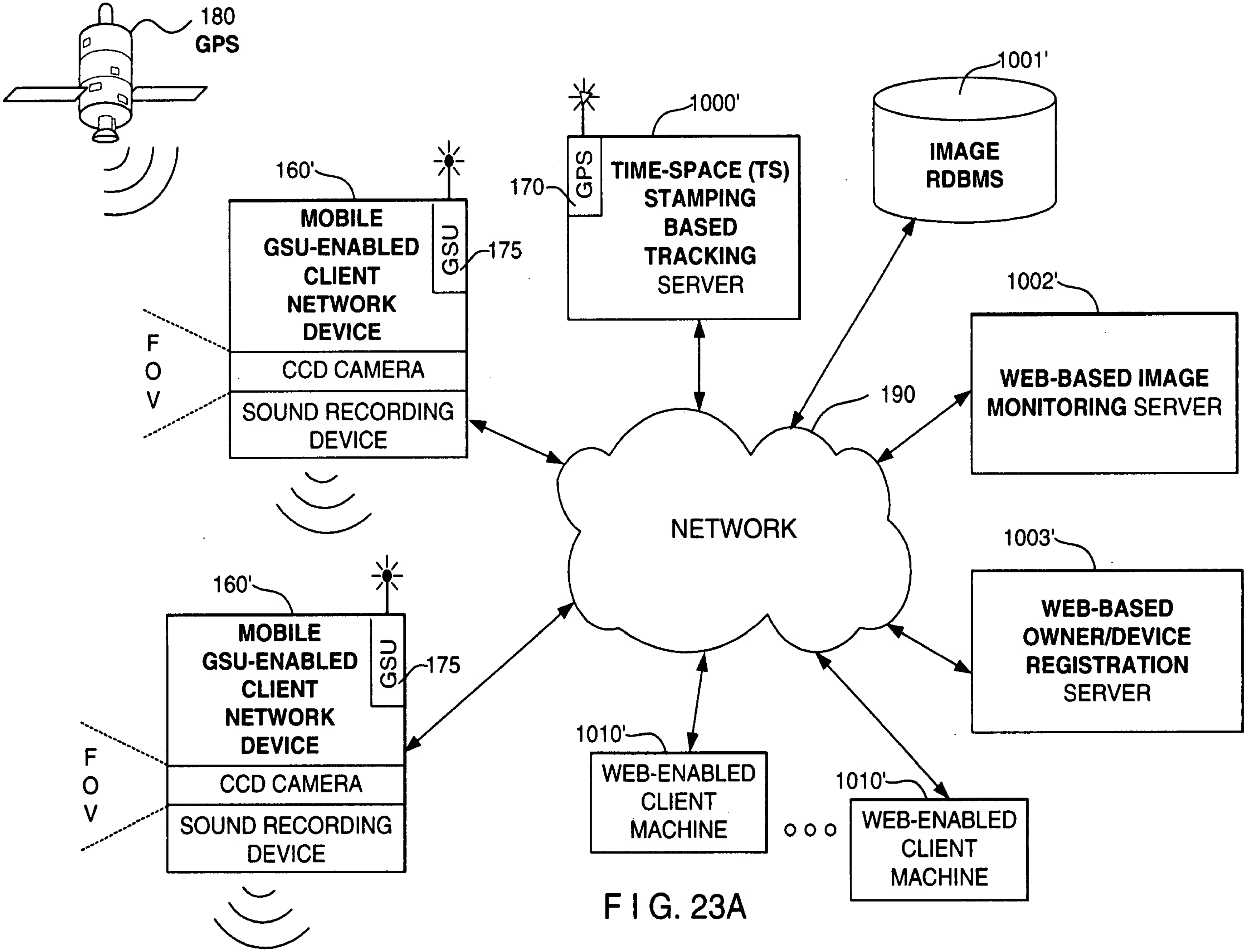


FIG. 21

OWNER/OBJECT DATABASE TABLE

OBJECT NAME	OBJECT OWNER	GSU'S UNIQUE ID CODE (UIC)	TSB STAMP		TSB STAMP
TOM SMITH	TOM SMITH	1567N2B0	(T_1,S_1,B_1)		(T_i,S_i,B_i)
JERRY DOG	TOM SMITH	1568N2B0	(T_1,S_1,B_1)		(T_i,S_i,B_i)
VOLVO S80	TOM SMITH	1569N2B0	(T_1,S_1,B_1)		(T_i,S_i,B_i)
⋮	⋮	⋮	⋮	…	⋮

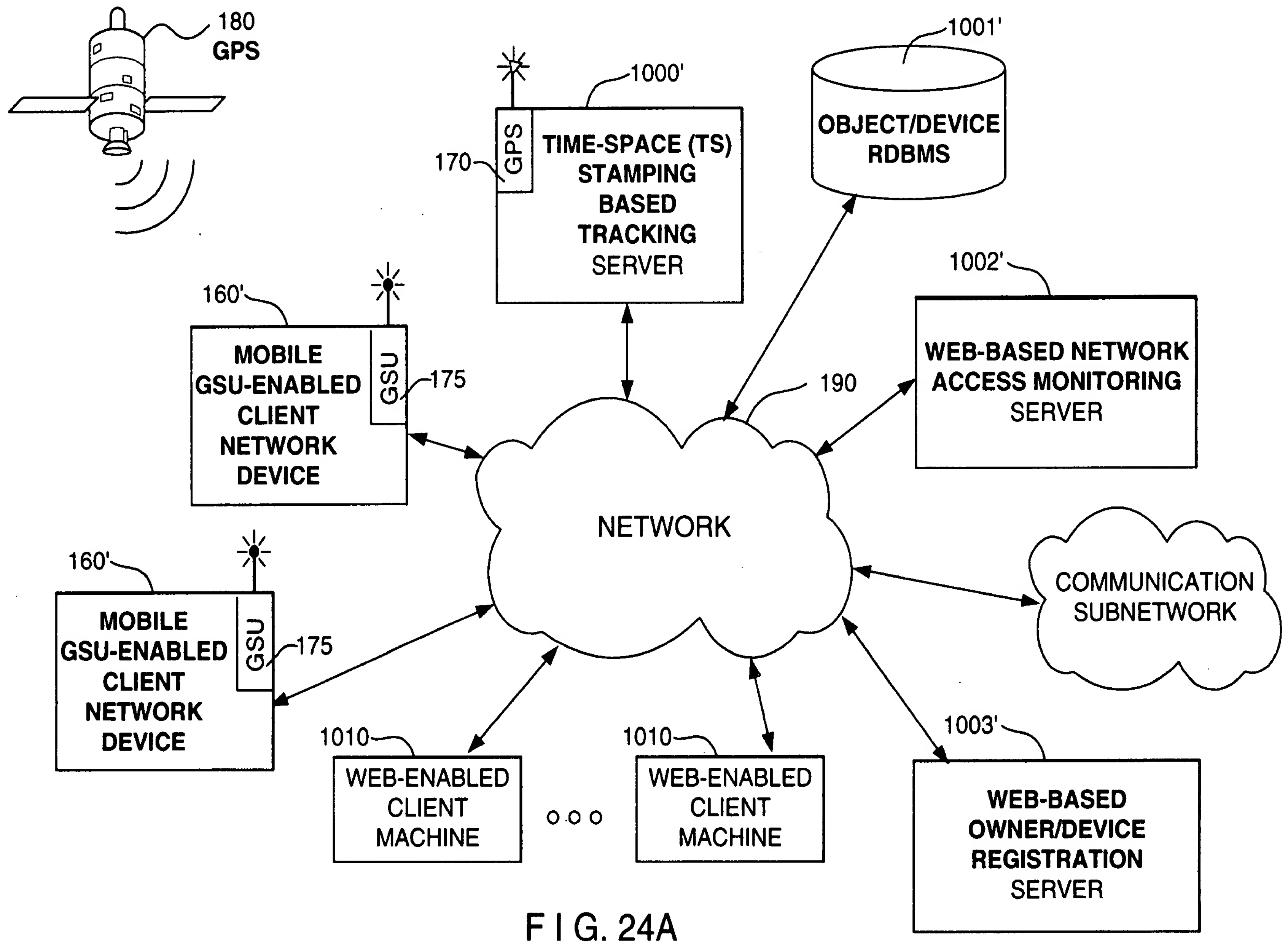
FIG. 22


180
GPS
160'
MOBILE GSU-ENABLED CLIENT NETWORK DEVICE
GSU
175
CCD CAMERA
SOUND RECORDING DEVICE
F O V
160'
MOBILE GSU-ENABLED CLIENT NETWORK DEVICE
GSU
175
CCD CAMERA
SOUND RECORDING DEVICE
F O V
170
GPS
1000'
TIME-SPACE (TS) STAMPING BASED TRACKING SERVER
1001'
IMAGE RDBMS
190
NETWORK
1002'
WEB-BASED IMAGE MONITORING SERVER
1003'
WEB-BASED OWNER/DEVICE REGISTRATION SERVER
1010'
WEB-ENABLED CLIENT MACHINE
1010'
WEB-ENABLED CLIENT MACHINE

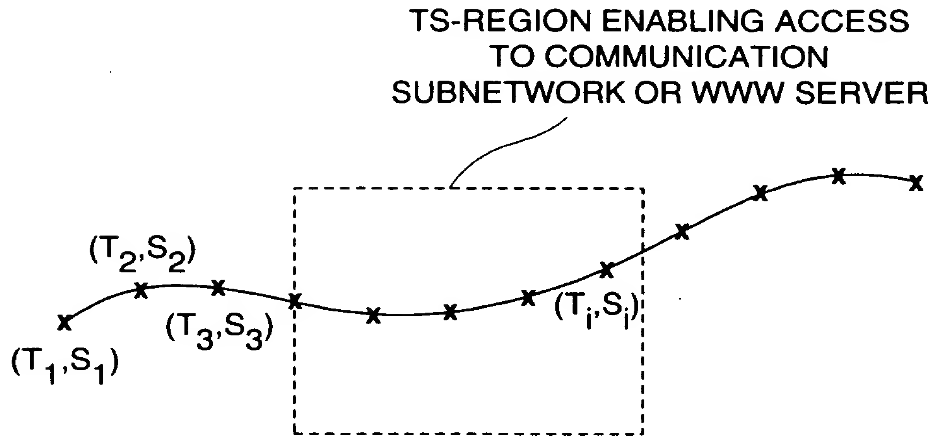
F I G. 23A

GSU-ENABLED CLIENT NETWORK DEVICE	TS-STAMPED CAPTURED IMAGE			
	T1	T2	∘∘∘	TN
X125132			∘∘∘	
X123561			∘∘∘	
⋮				
X351275			∘∘∘	

F I G. 23B


180
GPS
1000'
GPS
170
TIME-SPACE (TS) STAMPING BASED TRACKING SERVER
1001'
OBJECT/DEVICE RDBMS
160'
MOBILE GSU-ENABLED CLIENT NETWORK DEVICE
GSU
175
1002'
WEB-BASED NETWORK ACCESS MONITORING SERVER
190
NETWORK
160'
MOBILE GSU-ENABLED CLIENT NETWORK DEVICE
GSU
175
COMMUNICATION SUBNETWORK
1010
WEB-ENABLED CLIENT MACHINE
1010
WEB-ENABLED CLIENT MACHINE
1003'
WEB-BASED OWNER/DEVICE REGISTRATION SERVER

F I G. 24A


TS-REGION ENABLING ACCESS
TO COMMUNICATION
SUBNETWORK OR WWW SERVER
(T_1,S_1)
(T_2,S_2)
(T_3,S_3)
(T_i,S_i)

F I G. 24B

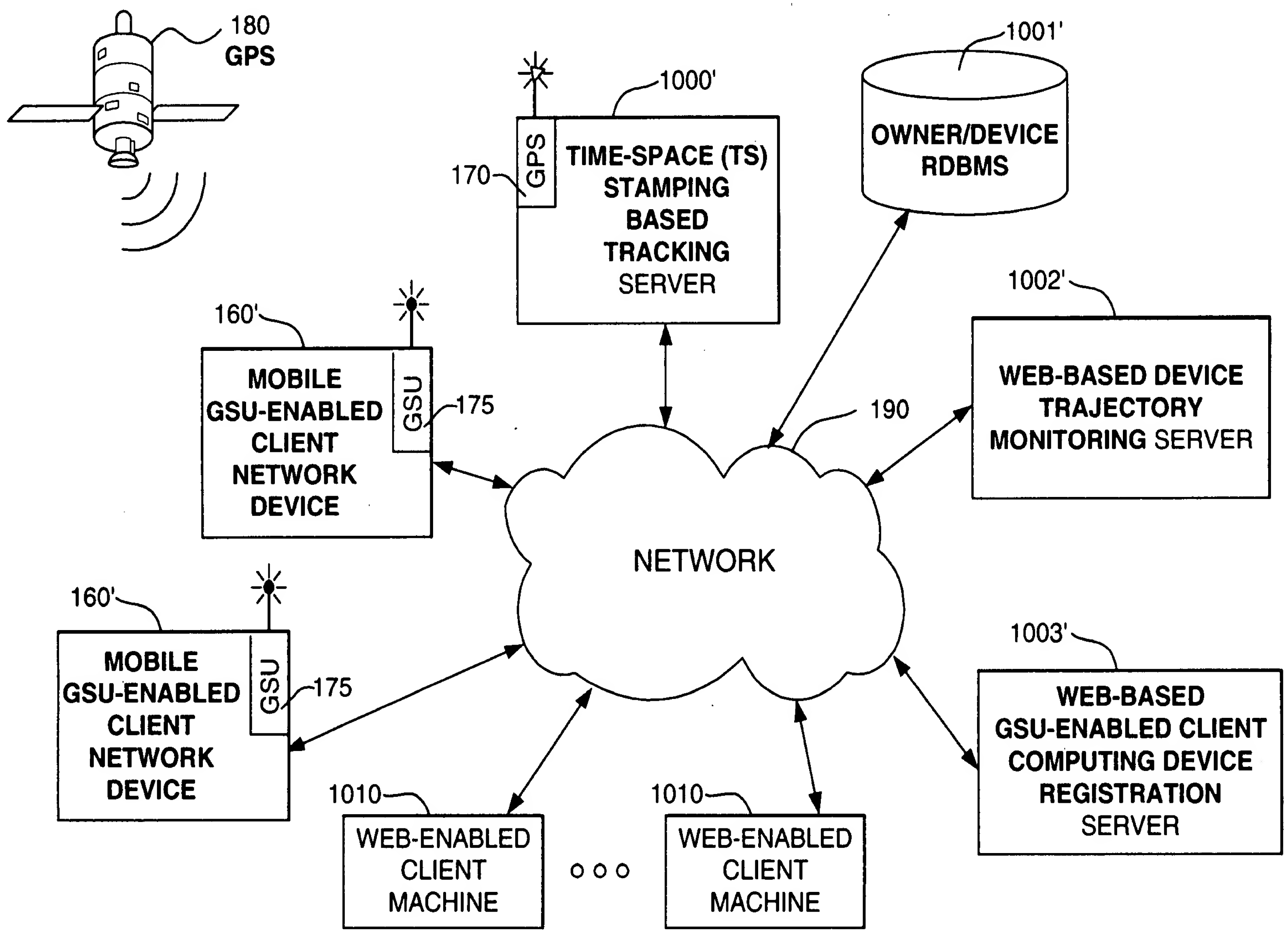

180
GPS
1000'
TIME-SPACE (TS) STAMPING BASED TRACKING SERVER
GPS
170
1001'
OWNER/DEVICE RDBMS
160'
MOBILE GSU-ENABLED CLIENT NETWORK DEVICE
GSU
175
1002'
WEB-BASED DEVICE TRAJECTORY MONITORING SERVER
190
NETWORK
160'
MOBILE GSU-ENABLED CLIENT NETWORK DEVICE
GSU
175
1003'
WEB-BASED GSU-ENABLED CLIENT COMPUTING DEVICE REGISTRATION SERVER
1010
WEB-ENABLED CLIENT MACHINE
1010
WEB-ENABLED CLIENT MACHINE

FIG. 25A

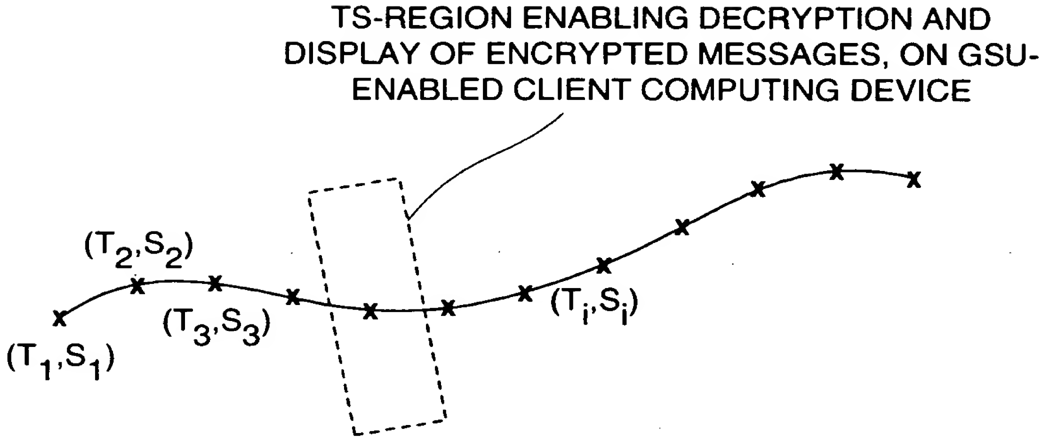
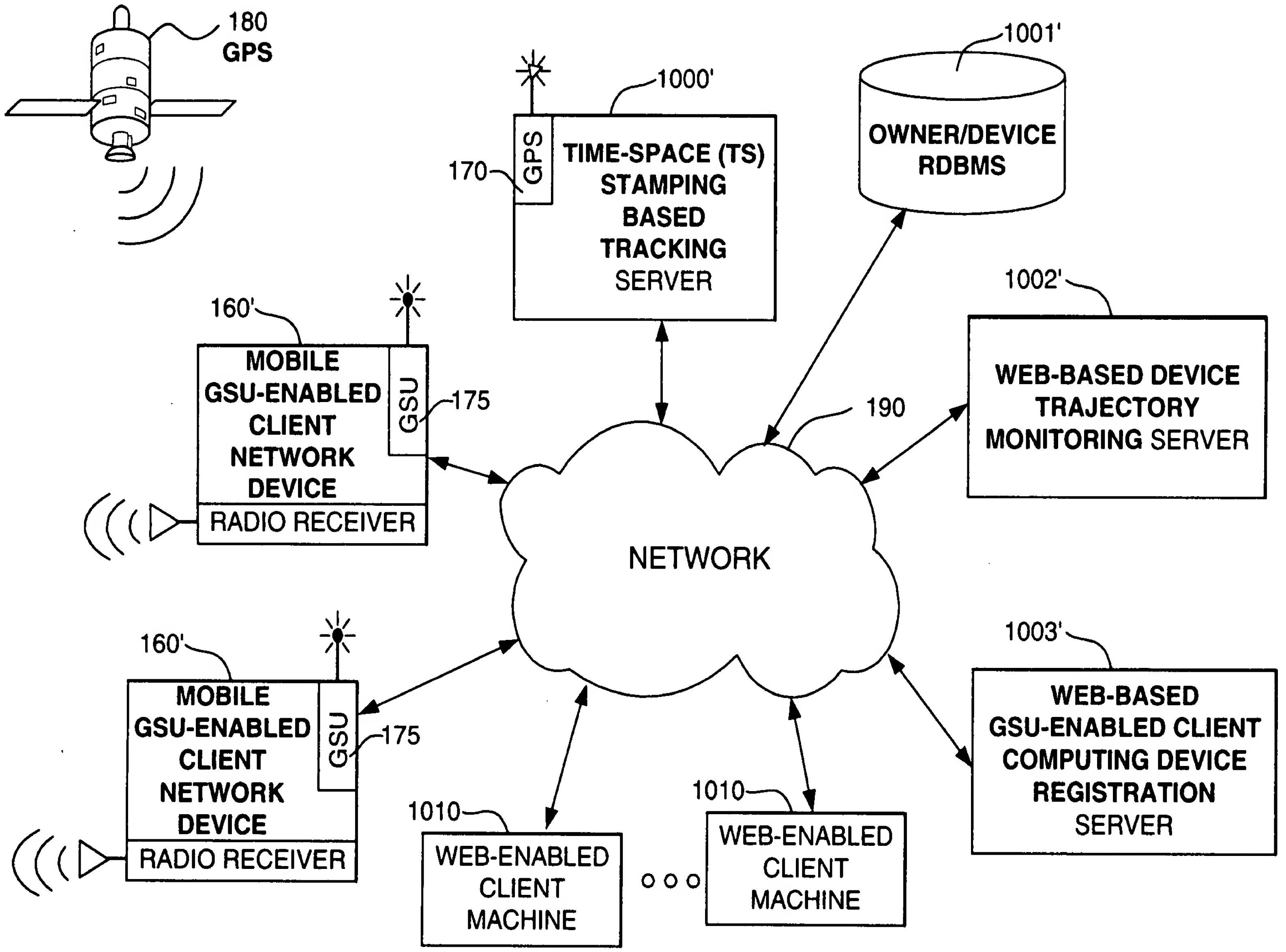

TS-REGION ENABLING DECRYPTION AND DISPLAY OF ENCRYPTED MESSAGES, ON GSU-ENABLED CLIENT COMPUTING DEVICE
(T_2,S_2)
(T_1,S_1)
(T_3,S_3)
(T_i,S_i)

FIG. 25B


180
GPS
1000'
GPS
170
TIME-SPACE (TS) STAMPING BASED TRACKING SERVER
1001'
OWNER/DEVICE RDBMS
1002'
WEB-BASED DEVICE TRAJECTORY MONITORING SERVER
160'
MOBILE GSU-ENABLED CLIENT NETWORK DEVICE
GSU
175
RADIO RECEIVER
190
NETWORK
1003'
WEB-BASED GSU-ENABLED CLIENT COMPUTING DEVICE REGISTRATION SERVER
160'
MOBILE GSU-ENABLED CLIENT NETWORK DEVICE
GSU
175
RADIO RECEIVER
1010
WEB-ENABLED CLIENT MACHINE
1010
WEB-ENABLED CLIENT MACHINE

F I G. 26A

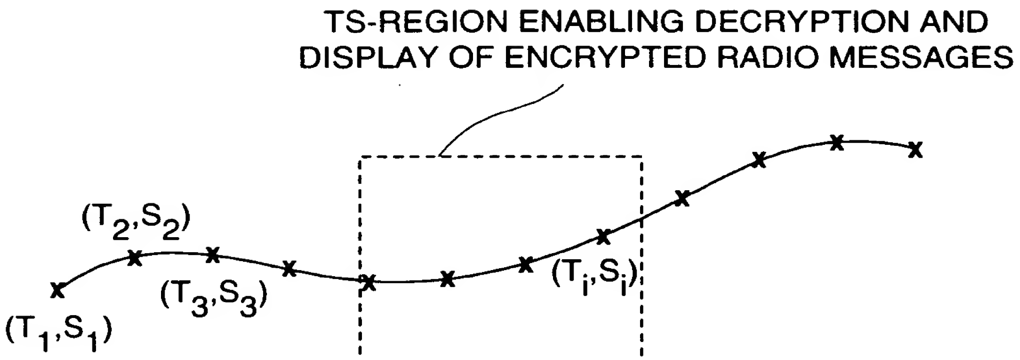
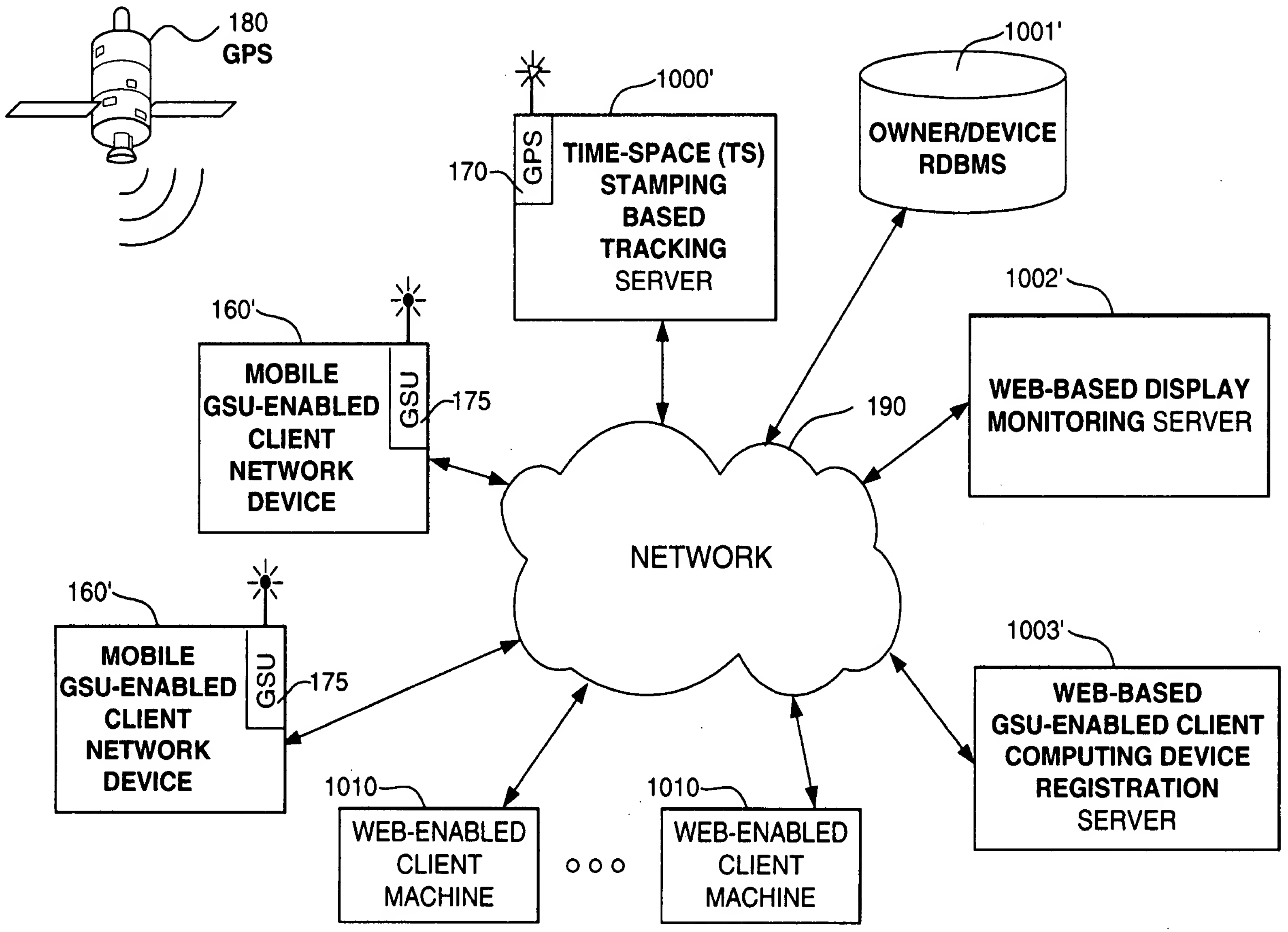

TS-REGION ENABLING DECRYPTION AND DISPLAY OF ENCRYPTED RADIO MESSAGES
(T_1,S_1)
(T_2,S_2)
(T_3,S_3)
(T_i,S_i)

FIG. 26B


180
GPS
1000'
GPS
170
TIME-SPACE (TS) STAMPING BASED TRACKING SERVER
1001'
OWNER/DEVICE RDBMS
160'
MOBILE GSU-ENABLED CLIENT NETWORK DEVICE
GSU
175
1002'
WEB-BASED DISPLAY MONITORING SERVER
190
NETWORK
160'
MOBILE GSU-ENABLED CLIENT NETWORK DEVICE
GSU
175
1003'
WEB-BASED GSU-ENABLED CLIENT COMPUTING DEVICE REGISTRATION SERVER
1010
WEB-ENABLED CLIENT MACHINE
1010
WEB-ENABLED CLIENT MACHINE

F I G. 27A

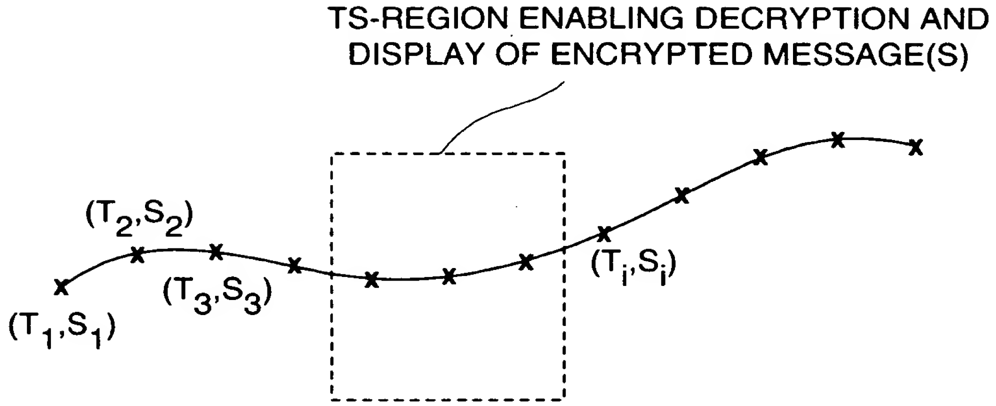
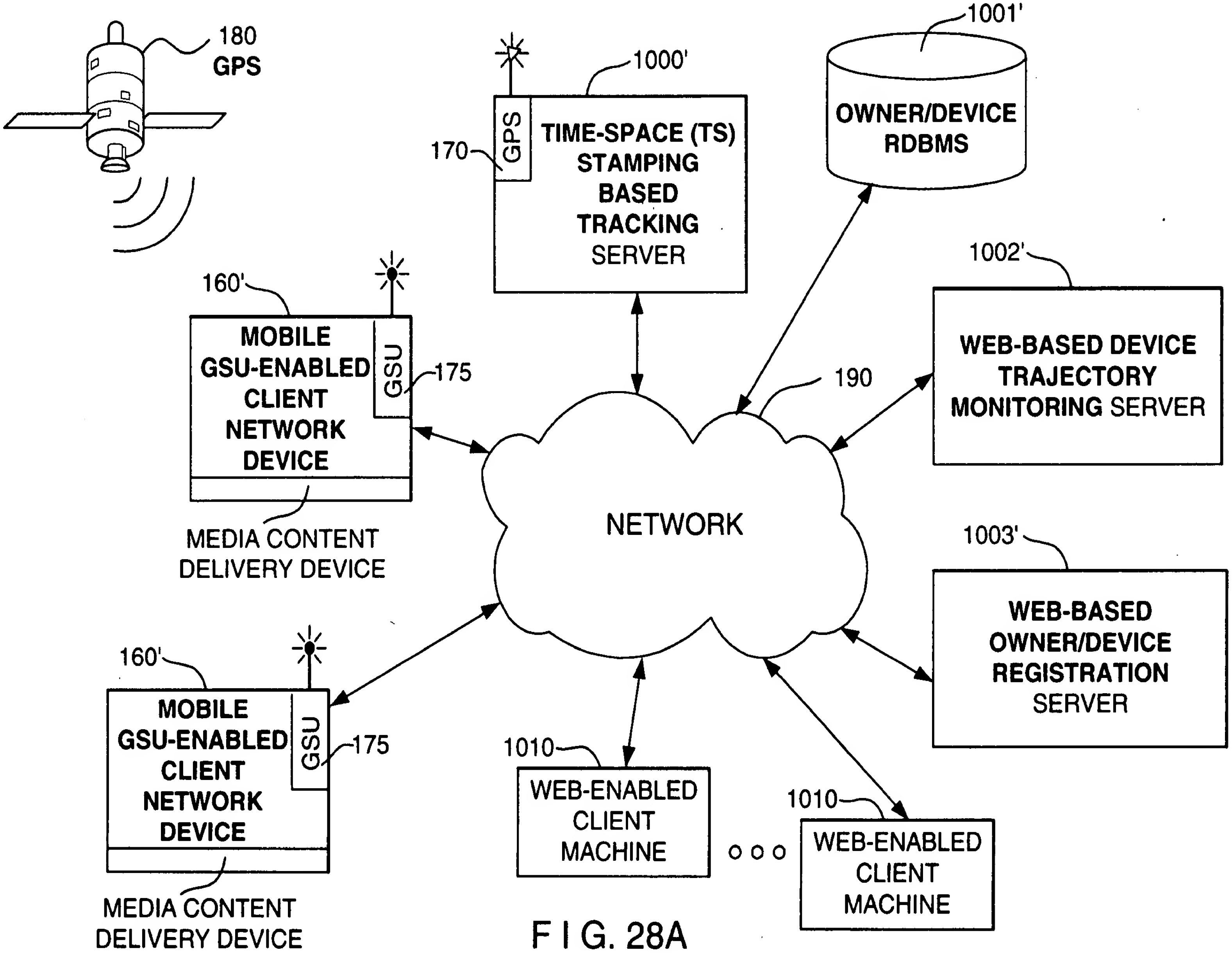

TS-REGION ENABLING DECRYPTION AND DISPLAY OF ENCRYPTED MESSAGE(S)
(T_2,S_2)
(T_3,S_3)
(T_1,S_1)
(T_i,S_i)

FIG. 27B


180
GPS
1000'
170
GPS
TIME-SPACE (TS) STAMPING BASED TRACKING SERVER
1001'
OWNER/DEVICE RDBMS
1002'
WEB-BASED DEVICE TRAJECTORY MONITORING SERVER
160'
MOBILE GSU-ENABLED CLIENT NETWORK DEVICE
GSU
175
MEDIA CONTENT DELIVERY DEVICE
190
NETWORK
1003'
WEB-BASED OWNER/DEVICE REGISTRATION SERVER
160'
MOBILE GSU-ENABLED CLIENT NETWORK DEVICE
GSU
175
MEDIA CONTENT DELIVERY DEVICE
1010
WEB-ENABLED CLIENT MACHINE
1010
WEB-ENABLED CLIENT MACHINE

F I G. 28A

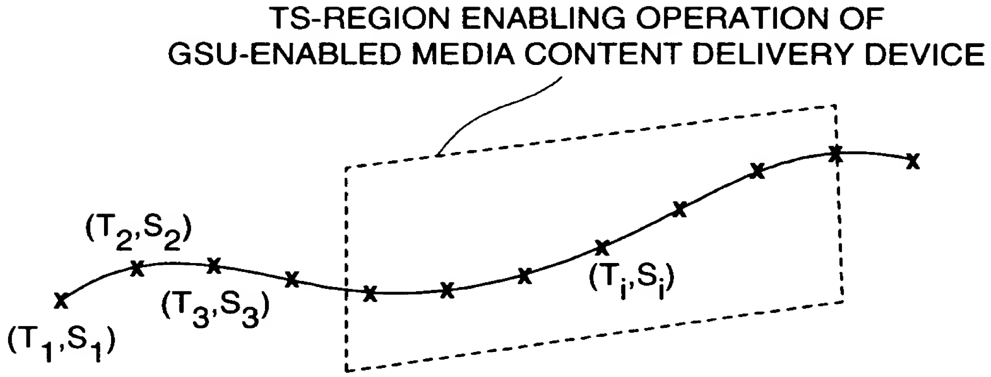

TS-REGION ENABLING OPERATION OF
GSU-ENABLED MEDIA CONTENT DELIVERY DEVICE
(T_2,S_2)
(T_3,S_3)
(T_1,S_1)
(T_i,S_i)

FIG. 28B

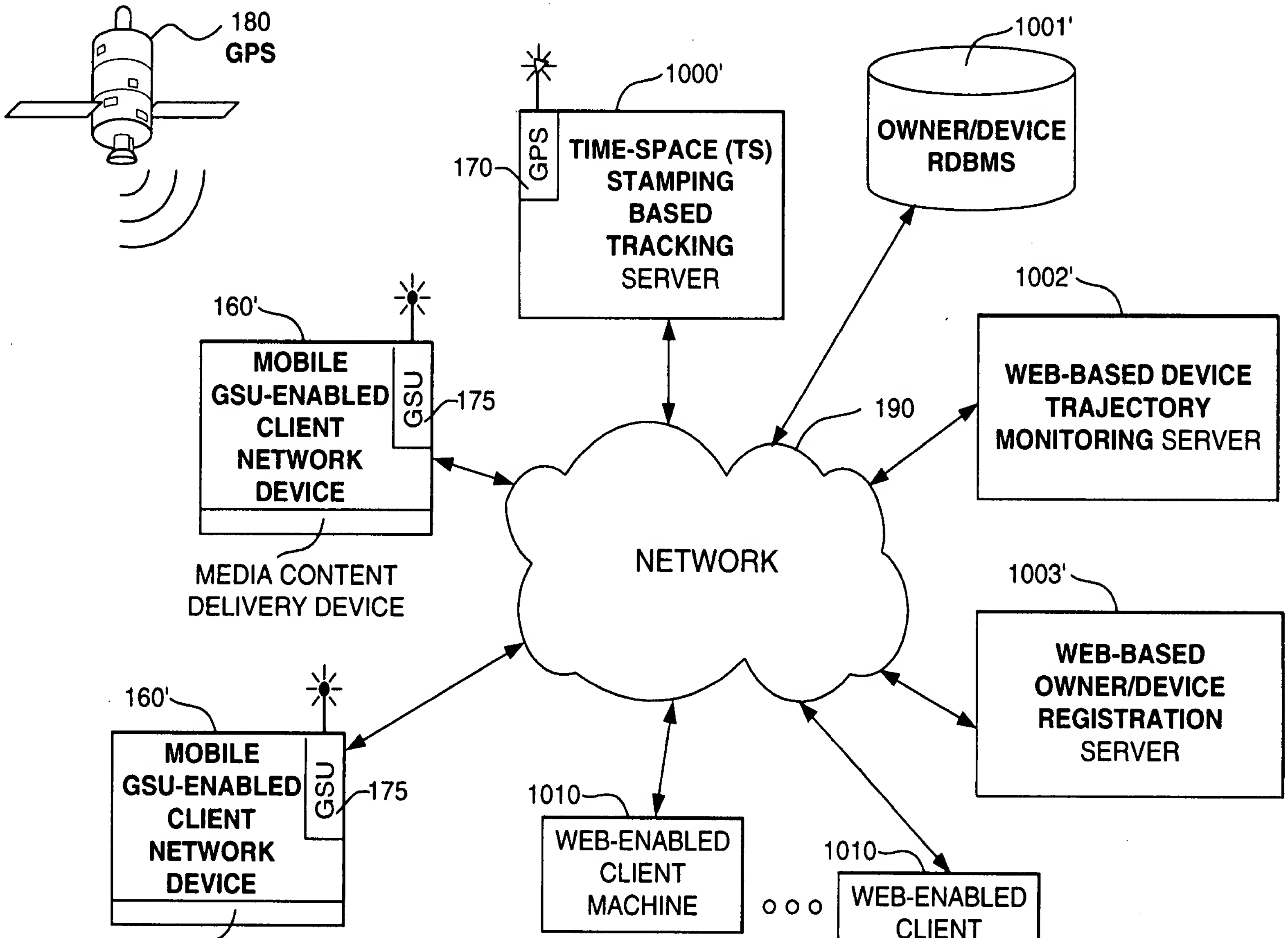
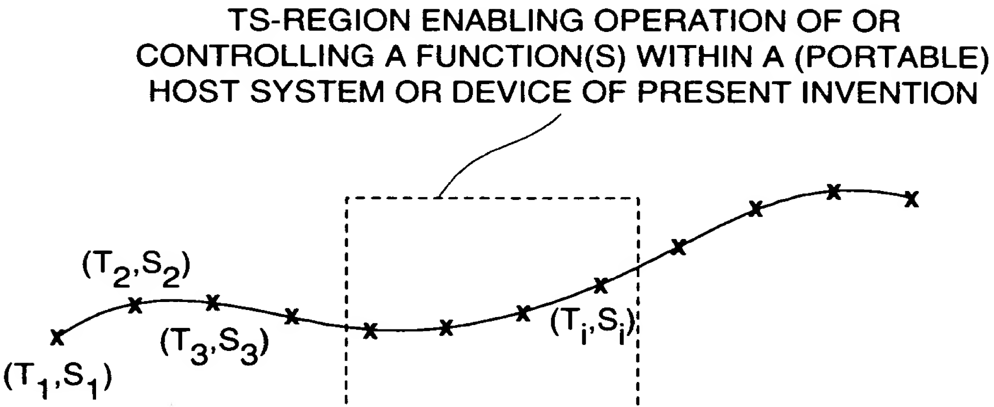

180
GPS
1000'
170
GPS
TIME-SPACE (TS) STAMPING BASED TRACKING SERVER
1001'
OWNER/DEVICE RDBMS
160'
MOBILE GSU-ENABLED CLIENT NETWORK DEVICE
GSU
175
MEDIA CONTENT DELIVERY DEVICE
190
NETWORK
1002'
WEB-BASED DEVICE TRAJECTORY MONITORING SERVER
1003'
WEB-BASED OWNER/DEVICE REGISTRATION SERVER
160'
MOBILE GSU-ENABLED CLIENT NETWORK DEVICE
GSU
175
MEDIA CONTENT DELIVERY DEVICE
1010
WEB-ENABLED CLIENT MACHINE
1010
WEB-ENABLED CLIENT MACHINE

FIG. 29A


TS-REGION ENABLING OPERATION OF OR CONTROLLING A FUNCTION(S) WITHIN A (PORTABLE) HOST SYSTEM OR DEVICE OF PRESENT INVENTION
(T_1,S_1)
(T_2,S_2)
(T_3,S_3)
(T_i,S_i)

F I G. 29B